

## EAST Search History

| Ref # | Hits     | Search Query  | DBs                                      | Default Operator | Plurals | Time Stamp       |
|-------|----------|---|--|------------------|---------|------------------|
| L8    | 979905   | (Organic waste OR garbage OR refuse OR trash OR waste OR compost OR rubbish OR junk OR litter OR debris OR scrap)   | US-PGPUB;<br>USPAT;<br>USOCR;<br>DERWENT | ADJ              | ON      | 2007/10/17 08:21 |
| L9    | 10824316 | (reduce\$5 OR break\$5 OR degrade\$5 OR smash\$5 OR fracture\$5 OR rupture\$5 OR shatter\$5 OR split\$5 OR crack\$5 OR sever\$5 OR condens\$5 OR shrink\$5 OR demolish\$5 OR destroy\$5 OR crush\$% OR separat\$5 OR shred\$5 OR mash\$5 OR mill\$5 OR chop\$5)                               | US-PGPUB;<br>USPAT;<br>USOCR;<br>DERWENT | ADJ              | ON      | 2007/10/17 08:21 |
| L10   | 3038866  | (dry OR press OR evaporat\$5 OR sublimat\$5)  | US-PGPUB;<br>USPAT;<br>USOCR;<br>DERWENT | ADJ              | ON      | 2007/10/17 08:21 |
| L11   | 90657    | L8 AND L9 AND L10 AND (biodegradable OR compostable OR ecological OR eco-friend\$5 OR recyclable\$5 OR green OR environmental)  | US-PGPUB;<br>USPAT;<br>USOCR;<br>DERWENT | ADJ              | ON      | 2007/10/17 08:21 |
| L12   | 627      | 502/401.ccls.   | US-PGPUB;<br>USPAT;<br>USOCR;<br>DERWENT | ADJ              | ON      | 2007/10/17 08:24 |
| L13   | 107      | 502/401.ccls. AND 8 AND 9 AND 10  | US-PGPUB;<br>USPAT;<br>USOCR;<br>DERWENT | ADJ              | ON      | 2007/10/17 08:26 |
| L14   | 39       | 502/401.ccls. AND 8 AND 9 AND 10 AND (binder OR egg white OR honey OR carbohydrate OR starch OR flour OR sugar) AND (heat OR steam OR convection OR thermal oil OR combustion OR fluid compression OR electricity OR microwave OR contact OR dielectric OR conduction OR radiant OR infrared) | US-PGPUB;<br>USPAT;<br>USOCR;<br>DERWENT | ADJ              | ON      | 2007/10/17 08:44 |

## EAST Search History

|     |       |   |  |     |    |                  |
|-----|-------|---|--|-----|----|------------------|
| L15 | 2     | 502/401.ccls. AND 8 AND 9 AND 10 AND (binder OR egg white OR honey OR carbohydrate OR starch OR flour OR sugar) AND (heat OR steam OR convection OR thermal oil OR combustion OR fluid compression OR electricity OR microwave OR contact OR dielectric OR conduction OR radiant OR infrared) AND water vapor AND (activate OR activated) | US-PGPUB;<br>USPAT;<br>USOCR;<br>DERWENT | ADJ | ON | 2007/10/17 08:47 |
| L16 | 0     | biodegradable binder AND (heat activation OR heat activated)  | US-PGPUB;<br>USPAT;<br>USOCR;<br>DERWENT | ADJ | ON | 2007/10/17 08:48 |
| L17 | 2425  | binder AND (heat activation OR heat activated)  | US-PGPUB;<br>USPAT;<br>USOCR;<br>DERWENT | ADJ | ON | 2007/10/17 11:49 |
| L18 | 182   | 68/1.ccls.  | US-PGPUB;<br>USPAT;<br>USOCR;<br>DERWENT | ADJ | ON | 2007/10/17 11:55 |
| L19 | 60332 | "241".clas.   | US-PGPUB;<br>USPAT;<br>USOCR;<br>DERWENT | ADJ | ON | 2007/10/17 11:55 |
| L20 | 6916  | "241".clas. AND 8 AND 9   | US-PGPUB;<br>USPAT;<br>USOCR;<br>DERWENT | ADJ | ON | 2007/10/17 13:00 |
| L21 | 3     | "241".clas. AND 8 AND 9 AND 17 AND 10   | US-PGPUB;<br>USPAT;<br>USOCR;<br>DERWENT | ADJ | ON | 2007/10/17 15:07 |
| L22 | 263   | 119/172   | US-PGPUB;<br>USPAT;<br>USOCR;<br>DERWENT | ADJ | ON | 2007/10/17 15:07 |
| L23 | 124   | 119/172.ccls.   | US-PGPUB;<br>USPAT;<br>USOCR;<br>DERWENT | ADJ | ON | 2007/10/17 15:08 |
| L24 | 113   | 119/172.ccls. AND 8   | US-PGPUB;<br>USPAT;<br>USOCR;<br>DERWENT | ADJ | ON | 2007/10/17 15:08 |

## EAST Search History

|     |          |   |  |     |    |                  |
|-----|----------|---|--|-----|----|------------------|
| L25 | 84       | 119/172.ccls. AND 8 AND 9 AND 10  | US-PGPUB;<br>USPAT;<br>USOCR;<br>DERWENT | ADJ | ON | 2007/10/17 15:13 |
| L26 | 120      | 502/439.ccls. AND 8 AND 9 AND 10  | US-PGPUB;<br>USPAT;<br>USOCR;<br>DERWENT | ADJ | ON | 2007/10/17 15:14 |
| S1  | 6        | "5275321"   | US-PGPUB;<br>USPAT                       | ADJ | ON | 2007/10/16 11:06 |
| S2  | 979905   | (Organic waste OR garbage OR refuse OR trash OR waste OR compost OR rubbish OR junk OR litter OR debris OR scrap)   | US-PGPUB;<br>USPAT;<br>USOCR;<br>DERWENT | ADJ | ON | 2007/10/16 11:08 |
| S3  | 10824316 | (reduce\$5 OR break\$5 OR degrade\$5 OR smash\$5 OR fracture\$5 OR rupture\$5 OR shatter\$5 OR split\$5 OR crack\$5 OR sever\$5 OR condens\$5 OR shrink\$5 OR demolish\$5 OR destroy\$5 OR crush\$% OR separat\$5 OR shred\$5 OR mash\$5 OR mill\$5 OR chop\$5) | US-PGPUB;<br>USPAT;<br>USOCR;<br>DERWENT | ADJ | ON | 2007/10/16 11:09 |
| S5  | 3038866  | (dry OR press OR evaporat\$5 OR sublimat\$5)  | US-PGPUB;<br>USPAT;<br>USOCR;<br>DERWENT | ADJ | ON | 2007/10/16 11:13 |
| S6  | 280976   | S2 AND S3 AND S5  | US-PGPUB;<br>USPAT;<br>USOCR;<br>DERWENT | ADJ | ON | 2007/10/16 11:19 |
| S7  | 90657    | S2 AND S3 AND S5 AND (biodegradable OR compostable OR ecological OR eco-friend\$5 OR recyclable\$5 OR green OR environmental)   | US-PGPUB;<br>USPAT;<br>USOCR;<br>DERWENT | ADJ | ON | 2007/10/16 11:20 |
| S8  | 10738    | S7 AND (smell\$5 OR odor\$5 OR odour\$5 OR stink\$5 OR offensive OR stench)   | US-PGPUB;<br>USPAT;<br>USOCR;<br>DERWENT | ADJ | ON | 2007/10/16 11:21 |
| S9  | 627      | 502/401.ccls.   | US-PGPUB;<br>USPAT;<br>USOCR;<br>DERWENT | ADJ | ON | 2007/10/16 11:22 |
| S10 | 13       | S8 AND S9   | US-PGPUB;<br>USPAT;<br>USOCR;<br>DERWENT | ADJ | ON | 2007/10/16 11:23 |

=&gt; d que 119

L2 1 SEA FILE=WPIX ABB=ON PLU=ON US20040127355/PN  
 L3 QUE ABB=ON PLU=ON ORGANIC(2A) (WASTE? OR MATTER? OR SOLID? OR TRASH? OR GARBAGE?)  
 L5 568 SEA FILE=WPIX ABB=ON PLU=ON L3 AND (BIODEGRAD? OR BIO(A) DEGRAD?)  
 L6 201 SEA FILE=WPIX ABB=ON PLU=ON L5 AND SOLID?  
 L7 24 SEA FILE=WPIX ABB=ON PLU=ON L6 AND (ODOR? OR ODOUR? OR SMELL?)  
 L8 1 SEA FILE=WPIX ABB=ON PLU=ON L7 AND L2  
 L9 1 SEA FILE=WPIX ABB=ON PLU=ON L7 AND (DRY OR DRIED) (2A) PIECE?  
 L10 13 SEA FILE=WPIX ABB=ON PLU=ON L7 AND (HEAT? OR TEMP?)  
 L11 1 SEA FILE=WPIX ABB=ON PLU=ON L7 AND (BIODEGRAD? OR BIO(A) DEGRAD?) (3A) BINDER  
 L12 24 SEA FILE=WPIX ABB=ON PLU=ON (L7 OR L8 OR L9 OR L10 OR L11)  
 L14 QUE ABB=ON PLU=ON ORGANIC(2A) (WASTE? OR MATTER? OR TRASH? OR GARBAGE?)  
 L15 21 SEA FILE=WPIX ABB=ON PLU=ON L14 AND L12  
 L16 2 SEA FILE=WPIX ABB=ON PLU=ON L15 AND CARBOHYDRAT?  
 L17 14 SEA FILE=WPIX ABB=ON PLU=ON L15 AND (WATER OR LIQUID WATER)  
 L18 21 SEA FILE=WPIX ABB=ON PLU=ON (L15 OR L16 OR L17)  
 L19 18 SEA FILE=WPIX ABB=ON PLU=ON L18 AND (PY<2003 OR PRY<2003 OR AY<2003)

=&gt; d que 134

L1 1 SEA FILE=HCAPLUS ABB=ON PLU=ON US20040127355/PN  
 L20 125121 SEA FILE=HCAPLUS ABB=ON PLU=ON ORGANIC(2A) (WASTE? OR MATTER? OR TRASH? OR GARBAGE?)  
 L21 5 SEA FILE=HCAPLUS ABB=ON PLU=ON L20 AND (BIODEGRAD? OR BIO(A) DEGRAD?) (3A) BINDER  
 L22 5250 SEA FILE=HCAPLUS ABB=ON PLU=ON L20 AND (BIODEGRAD? OR BIO(A) DEGRAD?)  
 L23 0 SEA FILE=HCAPLUS ABB=ON PLU=ON L22 AND (DRY OR DRIED) (2A) PIECE?  
 L25 1 SEA FILE=HCAPLUS ABB=ON PLU=ON L20 AND L1  
 L26 0 SEA FILE=HCAPLUS ABB=ON PLU=ON L20 AND B09B003?/IPC  
 L27 2620 SEA FILE=HCAPLUS ABB=ON PLU=ON L20 AND B09B003?/IC  
 L28 41 SEA FILE=HCAPLUS ABB=ON PLU=ON L27 AND MICROBIAL?  
 L29 0 SEA FILE=HCAPLUS ABB=ON PLU=ON L28 AND PICES?  
 L30 1 SEA FILE=HCAPLUS ABB=ON PLU=ON L28 AND PIECE?  
 L31 3 SEA FILE=HCAPLUS ABB=ON PLU=ON L28 AND (ODOR? OR ODOUR? OR SMELL?)  
 L32 8 SEA FILE=HCAPLUS ABB=ON PLU=ON L21 OR L23 OR (L25 OR L26) OR (L29 OR L30 OR L31)  
 L33 4 SEA FILE=HCAPLUS ABB=ON PLU=ON L28 AND CARBOHYDRAT?  
 L34 12 SEA FILE=HCAPLUS ABB=ON PLU=ON L32 OR L33

=&gt; d que 141

L35 39425 SEA FILE=PASCAL ABB=ON PLU=ON ORGANIC(2A) (WASTE? OR MATTER? OR TRASH? OR GARBAGE?)  
 L36 0 SEA FILE=PASCAL ABB=ON PLU=ON L35 AND (BIODEGRAD? OR BIO(A) DEGRAD?) (3A) BINDER  
 L37 4681 SEA FILE=PASCAL ABB=ON PLU=ON L35 AND MICROBIAL?  
 L38 0 SEA FILE=PASCAL ABB=ON PLU=ON L37 AND (CARBOHYDRAT? (3A) BI

NDER? OR BINDER?)  
 L40           0 SEA FILE=PASCAL ABB=ON PLU=ON L38 AND (DEVICE? OR  
               APPARATUS?)  
 L41           0 SEA FILE=PASCAL ABB=ON PLU=ON L36 OR L38 OR L40  
  
 => d que 153  
 L35           39425 SEA FILE=PASCAL ABB=ON PLU=ON ORGANIC(2A) (WASTE? OR  
               MATTER? OR TRASH? OR GARBAGE?)  
 L46           1 SEA FILE=JAPIO ABB=ON PLU=ON L35 AND (BIODEGRAD? OR  
               BIO(A) DEGRAD?) (3A) BINDER  
 L47           9307 SEA FILE=JAPIO ABB=ON PLU=ON ORGANIC(2A) (WASTE? OR  
               MATTER? OR TRASH? OR GARBAGE?)  
 L48           128 SEA FILE=JAPIO ABB=ON PLU=ON L47 AND (BIODEGRAD? OR  
               BIO(A) DEGRAD?)  
 L49           0 SEA FILE=JAPIO ABB=ON PLU=ON L48 AND CARBOHYDRAT? (3A) BIND  
               ER?  
 L50           2 SEA FILE=JAPIO ABB=ON PLU=ON L48 AND BINDER  
 L51           70 SEA FILE=JAPIO ABB=ON PLU=ON L48 AND (WATER OR LIQUID  
               WATER)  
 L52           2 SEA FILE=JAPIO ABB=ON PLU=ON L51 AND PIECE?  
 L53           4 SEA FILE=JAPIO ABB=ON PLU=ON L46 OR L49 OR L50 OR L52

=> d que 159  
 L35           39425 SEA FILE=PASCAL ABB=ON PLU=ON ORGANIC(2A) (WASTE? OR  
               MATTER? OR TRASH? OR GARBAGE?)  
 L47           9307 SEA FILE=JAPIO ABB=ON PLU=ON ORGANIC(2A) (WASTE? OR  
               MATTER? OR TRASH? OR GARBAGE?)  
 L54           0 SEA FILE=COMPENDEX ABB=ON PLU=ON L35 AND (BIODEGRAD? OR  
               BIO(A) DEGRAD?) (3A) BINDER  
 L55           1165 SEA FILE=COMPENDEX ABB=ON PLU=ON L47 AND (BIODEGRAD? OR  
               BIO(A) DEGRAD?)  
 L56           0 SEA FILE=COMPENDEX ABB=ON PLU=ON L55 AND (CARBOHYDRAT? (3A  
               ) BINDER? OR BINDER)  
 L57           0 SEA FILE=COMPENDEX ABB=ON PLU=ON L55 AND SOLID? (3A) PIECE?  
  
 L58           2 SEA FILE=COMPENDEX ABB=ON PLU=ON L55 AND PIECE?  
 L59           2 SEA FILE=COMPENDEX ABB=ON PLU=ON L54 OR (L56 OR L57 OR  
               L58)

=> dup rem 119 134 141 153 159

L41 HAS NO ANSWERS

FILE 'WPIX' ENTERED AT 12:20:17 ON 05 OCT 2007

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FILE 'HCAPLUS' ENTERED AT 12:20:17 ON 05 OCT 2007

USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.

PLEASE SEE "HELP USAGETERMS" FOR DETAILS.

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FILE 'JAPIO' ENTERED AT 12:20:17 ON 05 OCT 2007

COPYRIGHT (C) 2007 Japanese Patent Office (JPO) - JAPIO

FILE 'COMPENDEX' ENTERED AT 12:20:17 ON 05 OCT 2007

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PROCESSING COMPLETED FOR L19

PROCESSING COMPLETED FOR L34

PROCESSING COMPLETED FOR L41

PROCESSING COMPLETED FOR L53

PROCESSING COMPLETED FOR L59

L60 35 DUP REM L19 L34 L41 L53 L59 (1 DUPLICATE REMOVED)

ANSWERS '1-18' FROM FILE WPIX

ANSWERS '19-29' FROM FILE HCAPLUS

ANSWERS '30-33' FROM FILE JAPIO

ANSWERS '34-35' FROM FILE COMPENDEX

=> d 1-18 full

L60 ANSWER 1 OF 35 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN  
DUPLICATE 1

AN 2004-269932 [25] WPIX Full-text

DNC C2004-105041 [25]

DNN N2004-213513 [25]

TI Waste-processing outcome used to facilitate storage, transfer, or  
exchange of **organic matter** before it is discarded  
or used for another purpose, comprises collection of **dry**  
**pieces of organic matter**

DC D16; P43

IN MANU A

PA (WHIR-C) WHIRLPOOL CANADA INC

CYC 103

PI WO 2004024355 A1 20040325 (200425)\* EN 62[9]

US 20040127355 A1 20040701 (200444) EN

<--

AU 2003266880 A1 20040430 (200462) EN

ADT WO 2004024355 A1 WO 2003-CA1395 20030912; US 20040127355 A1  
Provisional US 2002-410327P 20020913; AU 2003266880 A1 AU  
2003-266880 20030912; US 20040127355 A1 US 2003-661567  
20030915

FDT AU 2003266880 A1 Based on WO 2004024355 A

PRAI US 2002-410327P 20020913

US 2003-661567 20030915

IPCR B09B0001-00 [I,A]; B09B0001-00 [I,C]; B09B0003-00 [I,A]; B09B0003-00  
[I,C]; C05F0017-02 [I,A]; C05F0017-02 [I,C]; C05F0009-00 [I,A];  
C05F0009-00 [I,C]

AB WO 2004024355 A1 UPAB: 20050528

NOVELTY - An outcome from waste-processing process or apparatus comprises a  
collection of pieces of **organic matter**. The pieces are **dry** enough to reduce  
**odors** produced by microbial growth.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for:

(1) production of **dried pieces of organic waste** by reducing raw **organic waste** to pieces, and drying the raw **organic waste** to a moisture content at which it is free of **odors** caused by microbial activity before or after it is reduced;

(2) production of a **solid** by reducing raw **organic waste** to pieces, producing a mixture of the pieces, water, and **biodegradable binder**, forming the mixture into a shape, and drying the shaped mixture;

(3) an apparatus for processing **organic waste**, comprising a receiving area or module having a first opening for admitting **organic matter** into the receiving area, side(s) defining a plenum in communication with the opening for receiving and temporarily storing **organic matter**, a reducing implement for reducing **organic matter** to pieces, and a second opening for discharging reduced **organic matter** from the plenum; and a processing area or module having a first opening connected with the second opening of the receiving module for

receiving pieces of **organic matter** from the receiving area, a form for supporting the **organic matter** while it dries into a **solid**, and a second opening for removing the **solid** from the processing area; and

(4) a process of operating a program making use of **organic matter**, by encouraging persons to produce collections or **solids**, collecting the collections or **solids**, and making use of the collected collections or **solids**.

USE - The outcome is useful as an interim form of **organic matter** created and existing after the **organic matter** is deemed to be wasted by a person, household, or business. It can be used to facilitate the storage, transfer, or exchange of the **organic matter** before it is discarded or used for another purpose. (All claimed)

ADVANTAGE - The **organic matter** pieces are free of odors from microbial activity for at least 1 month when stored indoors.

DESCRIPTION OF DRAWINGS - The figure is a flow chart for making outcomes.

TECH ORGANIC CHEMISTRY - Preferred Dimensions: The **organic matter** pieces have no dimension longer than 2 cm.

Preferred Properties: The outcome has moisture content of at most 20% (preferably 5-15%) calculated based on the weight of **water** in the outcome divided by the weight of the outcome including the **water**.

Preferred Process: The pieces are bound together with a **biodegradable binder**, **compostable binder**, or **carbohydrate binder**. The pieces may be closely packed or compacted together.

FS CPI; GMPI

MC CPI: D05-A04A

L60 ANSWER 2 OF 35 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN

AN 2007-611331 [58] WPIX Full-text

CR 2002-394821; 2006-778371

DNC C2007-218364 [58]

TI Treatment of **organic waste** to produce **odorless** beneficial **organic humus** material, involves biologically treating the waste in a micro-electron acceptor environment, and simultaneously nitrifying and denitrifying the waste in the environment

DC A97; D15; D16

IN MORRIS J W; NORTHROP J

PA (MORR-I) MORRIS J W; (NORT-I) NORTHROP J

CYC 1

PI US 20070144965 A1 20070628 (200758)\* EN 29[8]

ADT US 20070144965 A1 CIP of US 2000-709171 20001110; US

20070144965 A1 CIP of US 2003-600936 20030620; US 20070144965 A1 CIP of US 2005-106751 20050415; US 20070144965 A1 US 2006-592513 20061103

FDT US 20070144965 A1 CIP of US 6689274 B; US 20070144965 A1 CIP of US 6908495 B

PRAI US 2006-592513 20061103

US 2000-709171 20001110

US 2003-600936 20030620

US 2005-106751 20050415

IPCI C02F0003-30 [I,A]; C02F0003-30 [I,C]

AB US 20070144965 A1 UPAB: 20070911

NOVELTY - Treatment of **organic waste** involves biologically treating the waste in a micro-electron acceptor (MEA) environment, where oxygen is added to maintain less than 2 mg/l of dissolved oxygen throughout the MEA environment. The waste is simultaneously nitrified and denitrified in the environment. The increased conversion of at least one nutrient from soluble to particulate form is induced in the environment by micro-electron acceptor phosphorus accumulating organisms (MEAPAOs).

DETAILED DESCRIPTION - Treatment of **organic waste** involves biologically treating the waste in a micro-electron acceptor (MEA) environment, where oxygen is added to maintain less than 2 mg/l of dissolved oxygen throughout the MEA environment. The waste is simultaneously nitrified and denitrified in the environment. The increased conversion of at least one nutrient from soluble to particulate form is induced in the environment by micro-electron acceptor phosphorus accumulating organisms (MEAPAOs). The method further involves addition of chemicals to provide an energy source for the denitrification of nitrite or nitrate by facultative heterotrophic denitrifiers. INDEPENDENT CLAIMS are included for the following:

(1) creating microorganisms adapted to grow in a low electron acceptor environment and without a physically separated anaerobic environment involving biologically treating waste in MEA environment;

(2) an **odorless** beneficial organic humus material that are harvested from the **odorless**, biologically mediated treatment process;

(3) a system for biologically mediated treatment of **organic wastes** comprising unit for directing waste to a **temporary** anaerobic unit; and unit for directing the **temporary** anaerobic unit effluent stream to a microorganism growth managing and enhancer unit having MEA environment and a biomass having a population of MEAPAOs;

(4) a population of MEAPAOs adapted to grow in MEA environment without a physically separated and defined anaerobic environment, where MEAPAOs are capable of increased conversion of nutrient from soluble to particulate form the MEA environment; and

(5) a population of micro-organisms comprising MEAPAOs that are capable of increased conversion of nutrient from soluble to particulate form in a micro-electron acceptor environment without a physically separated and defined anaerobic environment.

USE - For treating **organic waste** to produce **odorless** beneficial organic humus material (claimed); for treating **solid** and **liquid organic wastes**, particularly animal farm wastes for removing nutrients e.g. phosphorus and nitrogen from waste; for treating municipal wastewater streams and for producing microbial cell protein of microbial cell mass for single cell protein production from **biodegradable** materials e.g. **solid** and/or **water borne**, and nitrogen source.

ADVANTAGE - The process is operated at low electron acceptor concentrations while maintaining high quantities of diverse populations of microorganisms. The process solves many of the problems associated with municipal, domestic, industrial, food industry, animal husbandry and other **organic wastes**, by providing an attractive and efficient way to resolve ecological problems associated with the treatment of **organic wastes**. The process solves odor emission problem common to **organic wastes** as well as the problem associated with high nutrient effluent discharge concentrations through the efficient, **odorless**, biologically mediated conversion of waste excrement materials or a vast array of other **organic wastes** into stable, economically and/or ecologically beneficial materials. The process biologically treats and stabilizes **organic waste**, such as animal excrement, containing concentrations of potentially polluting or environmentally harmful substrates. The process performs simultaneous nitrification and denitrification on **organic waste** streams and converts soluble phosphorus to particulate form. The process produces humus material having commercial value, does not having unpleasant odor, and can be safely maintained in open storage without significant migration of compounds. The process also manages **water**, which can be combined with **organic waste** to provide a nutrient rich aqueous fertilizer, which can be used to irrigate crops, or as a clean, generally low nutrient liquid, that with further processing is potentially suitable for discharge to a **water body**. The process treats an influent waste stream containing phosphorus/nitrogen ratios higher than 0.17 (preferably greater than or equal to 0.30 - 0.50) and still have effluent discharges with low quantities of phosphorus. The process converts approximately greater than or



equal to 50% of the influent waste stream soluble phosphorus into particulate form, incorporated into the humus material, and removed when that humus material is harvested. The process maintains a sufficient quantity of mutations, thus providing for an efficient, dynamic biologically mediated conversion process. The process allows the microbial community to adapt in a workable period to achieve a dynamic equilibrium. The organic and nitrogen loading allows an energy, carbon and nitrogen balance to occur between the microbial populations of facultative heterotrophic fermentors, autotrophic nitrifiers, facultative heterotrophic denitrifiers and autotrophic ammonium denitrifiers. The control of dissolved oxygen levels and/or oxygen additions creates and maintains the populations of facultative heterotrophic fermentors, autotrophic nitrifiers, facultative heterotrophic denitrifiers and autotrophic ammonium denitrifiers.

DESCRIPTION OF DRAWINGS - The figure shows a schematic of the predominant interrelationships of the organic waste, the major microbial groups responsible for biologically mediated conversion, the intermediate breakdown substances, and the final products of the process.

TECH ENVIRONMENT - The MEA environment includes populations of facultative heterotrophic fermentors, autotrophic nitrifiers, heterotrophic facultative denitrifiers, heterotrophic PAOs, heterotrophic MEAPAOs, and autotrophic ammonium denitrifiers. The MEA environment comprises biological microorganisms regenerating at a rate of greater than or equal to 1015 base pair replications/second. The MEA environment comprises concentrations of nitrate, nitrite, and dissolved oxygen below 5 mg/l. The MEA environment comprises concentrations of oxygen below 0.1 mg/l, and nitrate concentrations of below 0.5 mg/l. The waste comprises a concentration of biological oxygen demand (BOD) and total Kjeldahl nitrogen (TKN) of at least 100 mg/l, and a TKN to total BOD ratio of more than 1:20. The MEA environment contains at least 1017 biological microorganisms with a doubling time of less than or equal to 10 days, or at least 1013 biological microorganisms with an average doubling time of less than 30 days/pound of total BOD or TKN in combined waste stream. The wetlands environment is dewatered and the solids are harvested to recover a beneficial humus material. The humus material are mixed with at least one of clay, sand, silt, mud, soil, gravel, dust, mine tailings and dredgings, polymers, plastics or other inert or inorganic materials.

INORGANIC CHEMISTRY - The nutrient is phosphorus, or nitrogen.

FS CPI

MC CPI: A12-W11J; D04-A01J; D04-A01K2; D04-B06; D04-B07B; D04-B07C; D05-A04A; D05-H04; D05-H05

L60 ANSWER 3 OF 35 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN

AN 2005-140361 [15] WPIX Full-text

CR 2001-024560

DNC C2005-045693 [15]

TI Disposing of organic waste and wastewater involves forming a primary waste pond and establishing a microbiological methane fermentation zone within it

DC D15; D16

IN GREEN F B; OSWALD W J

PA (REGC-C) UNIV CALIFORNIA

CYC 1

PI US 6852225 B1 20050208 (200515)\* EN 14[2]

ADT US 6852225 B1 Provisional US 1999-130210P 19990420; US 6852225 B1 US 2000-552576 20000419

PRAI US 2000-552576 20000419  
US 1999-130210P 19990420

IPCR C02F0003-00 [I,A]; C02F0003-00 [I,C]; C02F0003-28 [I,A]; C02F0003-28 [I,C]

AB US 6852225 B1 UPAB: 20050708

NOVELTY - Disposing of waste comprises forming at least one primary waste pond partially constructed from earthwork and positioned within an outer pond that overlays the primary waste pond surrounding at least an upper lateral portion of it, and establishing a stable microbiological fermentation zone within each primary was pond.

DETAILED DESCRIPTION - Disposing of waste comprises forming at least one primary waste pond partially constructed from earthwork and positioned within an outer pond that overlays the primary waste pond surrounding at least an upper lateral portion of it, and establishing a stable microbiological fermentation zone within each primary was pond. At least one of the primary waste ponds has a bottom that is at least 6 meters below a surface of the outer pond and is at least partially separated from the outer pond by a wall. The microbiological methane fermentation zones comprises facultative heterotrophic bacteria and methane bacteria.

USE - The method is useful for disposing of organic waste and wastewater (e.g. sewage). The methane produced can be used as a fuel.

ADVANTAGE - The method for waste treatment is simpler, safer, and less costly than the current method. The method eliminates the need to remove, handle, and dispose of sludge residual over a long period of time, usually several decades. This advantage is particularly important because of new pollution control legislation that requires grit, floatable materials and fresh or partially stabilized sewage sludge, unless heat treated or heavily disinfected with chlorine, to be regarded as highly infectious and potentially toxic or hazardous. The method achieves purification and enrichment of methane gas emerging from the zones of the fermentation; reduction, precipitation and removal of heavy metals; immobilization of parasites; bio-degradation of many toxic compounds and significant removal (at least 60%) of biochemical oxygen demand (BOD). As the fermentation zones in advanced facultative ponds (AFPs) is constructed of earthwork and plastics, they are sufficiently inexpensive that they can be made large enough to permit almost infinite retention and very complete methane fermentation of the settleable volatile solids. The method controls sulfide odors from methane fermentation. The method biologically increases pH near the pond surface, thus retaining hydrogen sulfide in solution in the pond water. The biological increasing of the pH level near the pond surface increases the rate of die-away of pathogenic bacteria. The method transforms proteins and other nitrogen compounds to nitrogen gas and detoxifies chlorinated hydrocarbons and volatile organic compounds. The method captures and stores gases evolved from methane fermentation, and removes heavy metals, while establishing meromixis in fermentation cells or zones within primary wastewater ponds.

FS CPI

MC CPI: D04-B10; D05-A04A; D05-C14

L60 ANSWER 4 OF 35 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN

AN 2003-313237 [30] WPIX Full-text

DNC C2003-082231 [30]

TI Treatment of biologically convertible matter, such as manure involves providing non- biodegradable supports having microorganisms in biologically active condition immobilized on the supports

DC D15; D16

IN DEBLOIS M; GOULET J

PA (DEBL-I) DEBLOIS M; (GOUL-I) GOULET J; (REDA-N) REDAL INC

CYC 99

PI WO 2003022984 A2 20030320 (200330)\* EN 32[5]

AU 2002325743 A1 20030324 (200461) EN

US 20050037452 A1 20050217 (200514) EN

ADT WO 2003022984 A2 WO 2002-CA1404 20020910; AU 2002325743 A1

AU 2002-325743 20020910; US 20050037452 A1 WO 2002-CA1404

20020910; US 20050037452 A1 US 2004-488110 20040923

FDT AU 2002325743 A1 Based on WO 2003022984 A  
 PRAI GB 2001-21735 20010910  
 IC ICM C12M001-40  
 IPCR C12M0001-40 [I,A]; C12M0001-40 [I,C]  
 AB WO 2003022984 A2 UPAB: 20060119

NOVELTY - A biologically convertible matter is treated by providing non-biodegradable supports (43) having microorganisms in biologically active condition immobilized on the supports.

DETAILED DESCRIPTION - Treatment of biologically convertible matter, involves providing non biodegradable supports having microorganisms in biologically active condition immobilized on the supports; disposing the supports in an arrangement to enable free circulation of a gas through the arrangement; and contacting the biologically convertible matter with the supports under conditions to produce and separate a conversion material or to concentrate and fix elements of the biologically convertible material.

An INDEPENDENT CLAIM is also included for a bioreactor for treating biologically convertible matter, comprising an upper distribution chamber (12); a bioreactor chamber (14) disposed below the distribution chamber; feeding mechanism for feeding the biologically convertible matter from the distribution chamber into the bioreactor chamber; non-biodegradable supports mounted in the bioreactor chamber having microorganisms in a biologically active condition immobilized on the supports, where the supports are arranged to cause the microorganisms to contact the biologically convertible matter and convert into a conversion material or concentrate and fix elements of the biologically convertible matter; a collection chamber operatively connected to the bioreactor chamber to collect the conversion material or recover the fixed elements; mechanism for withdrawing the conversion material or fixed elements from the collection chamber.

USE - The invention is used for treating biologically convertible matter, e.g., manure, milk fraction or a milk derivative, solvent, organic or inorganic matter, processed food, a food by-product, heavy metal or an aqueous solution (claimed). It is also used for the treatment of gas, liquid and/or solid.

ADVANTAGE - The invented method converts biologically convertible matter into reusable or detoxified material in a cost-effective manner.

DESCRIPTION OF DRAWINGS - The figure is a longitudinal cross-section view of a modular bioreactor.

Distribution chamber (12)

Bioreactor chamber (14)

Supports (43)

TECH BIOLOGY - Preferred Components: The microorganisms comprise yeast, yeast like and/or bacteria. They also comprise yeast cells. They are from a wild type strain or genetically modified strain of yeast.  
 Preferred Material: The conversion material comprises a biomass composed of treated biologically convertible matter and/or microorganisms detached from the supports.  
 Preferred Method: The microorganisms allowed to fix, absorb, metabolize, alter, convert, digest or degrade the biologically convertible matter. They are also allowed to cause fermentation of the biologically convertible matter. The method comprises converting at least 0.1-90% biologically convertible matter into the conversion material. The elements in the biologically convertible matter are concentrated, fixed and recovered. A carbon source, nitrogen source, mineral, salt, amino acid or a product containing same is added to biologically convertible matter before contacting it with the microorganisms. The bioconvertible matter is treated in a continuous or a batch process. The microorganisms are immobilized onto the support under conditions promoting formation of glycoleme or thixotrope.

ORGANIC CHEMISTRY - Preferred Component: The carbohydrate

source can be starch, amygladin, arbinose, cellobiose, esculin, fructose, galactose, glucose, lactose, maltose, mannitol, mannose, melezitose, melibiose, raffinose, rhamnose, ribose, salicin, sorbitol, sucrose, trehalose, xylose, cellulose and/or organic acids.

MECHANICAL ENGINEERING - Preferred Components: The bioreactor comprises air inlet disposed on the collection chamber and arrange to allow air to circulate biologically through the bioreactor. The distribution chamber comprises an exhaust arranged to allow exit of air ascending in the bioreactor.

POLYMERS - Preferred Material: The supports are made of a polymer.

ABEX EXAMPLE - Pig manure was injected at the top of a bioreactor. As pig manure which was rich in ammonia, the treatment of liquid containing yeast must be supplemented with a source of carbon, e.g., molasses and supplied with continuous oxygen. The bioreactor can be aerated at the bottom with polluted air from a pig sty that contained ammonia. The yeast or microorganisms to be immobilized on the supports was made to the capacity of the species to fix and to transform the substrate to be treated. The supports used in the bioreactor chamber were perforated polyester or vinyl membranes. They permitted fixation of yeast and exchanged of oxygen. The lattice was maintained vertically by a mechanical support. The result was the formation of a biomass from pig manure and a decreased of the odors resulting from a removal of ammonia by the yeast.

FS CPI

MC CPI: D05-A03A; D05-A04A

L60 ANSWER 5 OF 35 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN

AN 2004-212014 [20] WPIX Full-text

DNC C2004-084023 [20]

TI Composition for adding to sewage pipe systems or septic tanks, comprises yarrowia lipolytica, bacillus subtilis and nonionic surfactant

DC D15; D16

IN DEY E

PA (MILJ-N) MILJOEKEMI MIKAB OCH LIMTEK AB

CYC 1

PI SE 2002000618 A 20030902 (200420)\* SV 19[0]

ADT SE 2002000618 A SE 2002-618 20020301

PRAI SE 2002-618 20020301

IPCR C02F [I,S]; C02F0003-34 [I,A]; C02F0003-34 [I,C]

AB SE 200200618 A UPAB: 20050528

NOVELTY - The aqueous composition comprises Yarrowia lipolytica and Bacillus subtilis microorganisms, in addition to a nonionic surfactant.

DETAILED DESCRIPTION - An aqueous composition comprises Yarrowia lipolytica and Bacillus subtilis microorganisms, in addition to a nonionic surfactant. INDEPENDENT CLAIMS are also included for the following:

(1) Sewage pipe system and septic maintenance method in which the above composition is added to the system or a tank; and

(2) Isolated bacteria Bacillus subtilis deposited as NCIMB 41118

USE - For the maintenance of sewage pipe or drain systems and septic tanks (claimed). Examples of septic tanks include toilets in caravans, aircraft, trains, buses, boats or holiday homes. The composition helps break down all organic material (e.g. human waste products and toilet paper) into a substantially anaerobic liquid

ADVANTAGE - Organic material is broken down into a substantially anaerobic liquid free from environmentally harmful substances, allowing the material to be disposed of naturally or used as fertilizer. No mechanical parts are required for this maintenance work.

TECH ORGANIC CHEMISTRY - The composition also contains at least one hydrolytic enzyme (preferably lipase, amylase or cellulose), a binder

/ emulsifier (preferably natural rubber), an anti-foaming agent and a biodegradable biocide. Preferably the composition comprises 0.1-10 wt.% *Yarrowia lipolytica*, 0.1-10 wt.% *Bacillus subtilis*, 0.1-20 wt.% lipase, 0.1-20 amylase, 0.1-10 cellulase, 0.01-10 wt.% binder / emulsifier, 0.1-20 wt.% nonionic surfactant, 0.1-10 wt.% anti-foaming agent, 0.01-5 wt.% biodegradable biocide and the balance water. The use concentration for the composition is 1:10 to 1:30.

BIOLOGY - The composition contains *Yarrowia lipolytica* CCY 29 26 31.

ABEX EXAMPLE - A composition suitable for dilution with tap water in a ratio of 1:24 comprised 0.1 wt.% xanthan gum, 3 wt.% sodium lauryl sulphate, 2 wt.% polypropylene glycol 2000, 0.1 wt.% Bronopol, 0.1 wt.% lemon fragrance, 2 wt.% lipase, 0.5 wt.% amylase, 5 wt.% cellulose, 0.5 wt.% *Bacillus subtilis* (NCIMB 41118), 0.5 wt.% *Yarrowia lipolytica* (CCY 29 26 31) and 86.2 wt.% water. Addition of 0.2 l diluted composition to a septic tank resulted in all the solid organic waste being broken down into a substantially odourless liquid.

FS CPI

MC CPI: D04-A01J; D04-A02; D04-B10; D05-A02; D05-A04A; D05-H04

L60 ANSWER 6 OF 35 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN

AN 2001-388867 [41] WPIX Full-text

CR 1993-109220; 1999-539169

DNC C2001-118568 [41]

TI Simultaneous aeration and agitation of hydrocarbon waste products involves using small reduced pressure microbubbles dispersed and maintained in hydrocarbon waste products to interact with aerobic bacteria

DC D15

IN BLOUGH R S; HOAGE J B; MESSER L A

PA (SEWA-N) SEWAGE AERATION SYSTEMS INC

CYC 1

PI US 6245237 B1 20010612 (200141)\* EN 6[5]

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ADT US 6245237 B1 Div Ex US 1991-687373 19910418; US 6245237 B1

CIP of US 1992-969001 19921030; US 6245237 B1 Cont of

US 1992-996968 19921223; US 6245237 B1 US 1995-472195

19950607

FDT US 6245237 B1 Div ex US 5194144 A; US 6245237 B1 Cont of US 5951867 A

PRAI US 1995-472195 19950607

US 1991-687373 19910418

US 1992-969001 19921030

US 1992-996968 19921223

IPCR B01F0003-04 [I,A]; B01F0003-04 [I,C]; B01F0007-00 [N,A]; B01F0007-00

[N,C]; C02F0003-02 [I,A]; C02F0003-02 [I,C]; C02F0003-12 [I,A];

C02F0003-12 [I,C]

AB US 6245237 B1 UPAB: 20060117

NOVELTY - Simultaneous aeration and agitation of hydrocarbon waste products involves moving atmospheric pressure air through confined zone into larger zone containing hydrocarbon waste products; dispersing microbubbles into waste products while agitating; and maintaining dispersed microbubbles in waste products to increase lateral oxygen transfer and replace oxygen used by aerobic bacteria.

DETAILED DESCRIPTION - Simultaneous aeration and agitation of hydrocarbon waste products involves moving atmospheric pressure air through confined zone into larger zone of reduced air pressure which contains hydrocarbons waste products. Small reduced pressure microbubbles are dispersed into the waste products while agitating. The microbubbles have 0.25 mm average size. The dispersed microbubbles are maintained in the waste products to

increase lateral oxygen transfer to replace oxygen used by aerobic bacteria. An INDEPENDENT CLAIM is also included for a method for decomposing waste material by aerobic action.

USE - The method is used for simultaneously aerating and agitating hydrocarbon waste products, biological waste material, or biodegradable material.

ADVANTAGE - The reduced air pressure small microbubbles suspended and maintained in waste material provide replacement molecules for dissolved oxygen assimilated by the aerobic bacteria during metabolic breakdown of organic matter into carbon dioxide and water waste. It results in no odor, low suspended solids, reduced biochemical oxygen demand, and low coliform counts.

TECH ENVIRONMENT - Preferred Method: The microbubbles formed from air are maintained with the waste products for up to 10-12 hours. They are produced by drawing the atmospheric pressure air through an orifice into an expansion chamber and then into the waste products. They are produced and dispersed by air tube into a propeller rotating at high speed.

FS CPI

MC CPI: D04-A01J; D04-A01K; D04-B04

L60 ANSWER 7 OF 35 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN

AN 1999-337968 [28] WPIX Full-text

DNC C1999-099451 [28]

TI Bioreactor for aerobic treatment of aqueous wastes

DC D15

IN PELLETIER D

PA (DESS-N) DESSAU SOPRIN; (SOPR-N) SOPRIN ADS

CYC 80

PI WO 9925657 A2 19990527 (199928)\* EN 32 [4]

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AU 9912211 A 19990607 (199943) EN

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CA 2221407 A1 19990518 (199945) EN

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ADT WO 9925657 A2 WO 1998-CA1076 19981118; CA 2221407 A1 CA 1997-2221407 19971118; AU 9912211 A AU 1999-12211 19981118

FDT AU 9912211 A Based on WO 9925657 A

PRAI CA 1997-2221407 19971118

IPCR C02F0003-12 [I,A]; C02F0003-12 [I,C]; C02F0003-22 [I,A]; C02F0003-22 [I,C]

AB WO 1999025657 A2 UPAB: 20050521

NOVELTY - Aerobic bioreactor for treating aqueous wastes at high organic and solids loadings, enabling the production of flocs and their subsequent removal in a settling tank, thereby yielding a significant purification performance of the aqueous waste. The invention also allows efficient and environmentally sound treatment of the treated liquid effluent.

DETAILED DESCRIPTION - The bioreactor has a reservoir (2) with opposite aqueous waste inlet and outlet (15,17), at least one oxygen containing medium, e.g. air, diffuser (40) and air lift pump, e.g. Venturi pump, (38) located in the lower part of the reservoir, and a channel system (34) located in the reservoir upper part. The air lift pump and the oxygen containing medium diffuser enable homogeneous oxidation of the mixed liquor, i.e. aqueous waste and biomass capable of biodegrading the waste.

USE - For treatment of domestic, industrial or agricultural aqueous wastes rich in organic content, either soluble or particulate.

ADVANTAGE - The efficiency of biodegradation of organic waste is increased. The treated water is substantially free of phosphorus and nitrogen and the product sludge has a better fertilizing quality. The aqueous waste

does not need prior treatment. The reactor is free of moving mechanical parts. The odor emission is controlled.

DESCRIPTION OF DRAWINGS - The drawing shows a structure and configuration of the bioreactor

Bioreactor reservoir (2)  
Inlet and outlet (15,17)  
Channel system (34)  
Venturi pump (38)  
Air diffuser (40)

FS CPI

MC CPI: D04-A01K

L60 ANSWER 8 OF 35 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN

AN 1999-311574 [26] WPIX Full-text

DNC C1999-091941 [26]

TI Treatment of animal waste to produce dry solid, useful as fertilizer

DC A14; A97; C04; D22

IN BILLINGS R

PA (BILL-I) BILLINGS R

CYC 1

PI US 5897785 A 19990427 (199926)\* EN 5[1]

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ADT US 5897785 A US 1997-863776 19970527

PRAI US 1997-863776 19970527

IPCR C02F0001-32 [I,A]; C02F0001-32 [I,C]; C02F0001-54 [I,C]; C02F0001-56 [I,A]; C05F0003-00 [I,A]; C05F0003-00 [I,C]

AB US 5897785 A UPAB: 20060115

NOVELTY - Treatment of animal waste by diluting with water, exposing to ultraviolet (UV) radiation, mixing with cationic polymers and removing water, is new.

DETAILED DESCRIPTION - Treatment of animal waste (I) comprises:

(a) diluting (I) with water to form a thin waste slurry;

(b) exposing the slurry to UV radiation to break the deoxyribonucleic acid (DNA) coding in the bacterial, fungal, viral and algal constituents of (I) to ozonate (I);

(c) mixing very high charge cationic polymers with the waste slurry to cause solids to react with the polymers and separate from the water;

(d) removing the water from the solids; and optionally

(e) drying the solids and using the dry solid as fertilizer.

USE - The method is used to process animal waste, particularly poultry, swine or cattle waste, or other biodegradable organic waste to produce a solid product which can be used as a fertilizer.

ADVANTAGE - The process removes odour and eliminates bacterial, fungal, viral and algal constituents. The solid material is rich in nutrients. Liquid is recycled in the process. Removal of water decreases the volume of waste by 75%.

DESCRIPTION OF DRAWINGS - The figure shows the equipment used in the process. Animal house (10); Scraper (12); Sloping beach (18); Dilution tank (20); Container (38); Polymer mix tank (40); Belt press (41); Dry waste tote (44); Waste booth (64).

TECH ENVIRONMENT - Preferred Process: Step (b) comprises alternate exposure of (I) to UV radiation of wavelength 253.7 nm to destroy DNA and wavelength 218-220 (preferably 218) nm to produce ozone which oxidises (I). Water removed during step (d) is recycled and used in step (a). (I) is diluted in (a) to a ratio of 1 part poultry waste to 10 parts water.

POLYMERS - The polymers are polyacrylamide copolymers.

FS CPI

MC CPI: A04-D04A; A12-W04B; C04-B04B; C14-T04; D09-A01A; D09-A02

L60 ANSWER 9 OF 35 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN  
 AN 1998-481095 [41] WPIX Full-text  
 DNC C1998-145600 [41]  
 DNN N1998-375364 [41]  
 TI Anaerobic digestion and thermal drying of e.g. domestic wastes -  
 avoids composting and dries product directly and thoroughly in process  
 minimising disposal and self-sufficient in energy, maximising process  
 heat recovery and electricity generation  
 DC D16; P41; P43  
 IN RINDELAUB F; RINDELAUB F A E  
 PA (LINM-C) LINDE AG; (LINM-C) LINDE BRV BIOWASTE TECHNOLOGIES AG;  
 (RIND-I) RINDELAUB F  
 CYC 79  
 PI WO 9838145 A1 19980903 (199841)\* DE 26[3]  
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 AU 9864981 A 19980918 (199908) EN  
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 NO 9904060 A 19991022 (200001) NO  
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 EP 961762 A1 19991208 (200002) DE  
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 CZ 9902996 A3 20000412 (200026) CS  
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 HU 2000000911 A2 20000828 (200055) HU  
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 KR 2000075536 A 20001215 (200131) KO [3]  
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 JP 2001513067 W 20010828 (200156) JA 18  
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 US 6423532 B1 20020723 (200254) EN  
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 EP 961762 B1 20040929 (200464) DE  
 DE 59812031 G 20041104 (200474) DE  
 ES 2227813 T3 20050401 (200524) ES  
 NO 320188 B 20051107 (200577) NO  
 ADT WO 9838145 A1 WO 1998-EP888 19980217; AU 9864981 A AU  
 1998-64981 19980217; DE 59812031 G DE 1998-59812031  
 19980217; EP 961762 A1 EP 1998-910688 19980217; EP  
 961762 B1 EP 1998-910688 19980217; DE 59812031 G EP  
 1998-910688 19980217; ES 2227813 T3 EP 1998-910688  
 19980217; JP 2001513067 W JP 1998-537256 19980217; NO  
 9904060 A WO 1998-EP888 19980217; EP 961762 A1 WO  
 1998-EP888 19980217; CZ 9902996 A3 WO 1998-EP888 19980217  
 ; HU 2000000911 A2 WO 1998-EP888 19980217; KR 2000075536 A  
 WO 1998-EP888 19980217; JP 2001513067 W WO 1998-EP888  
 19980217; US 6423532 B1 WO 1998-EP888 19980217; EP  
 961762 B1 WO 1998-EP888 19980217; DE 59812031 G WO  
 1998-EP888 19980217; NO 320188 B WO 1998-EP888 19980217  
 ; CZ 9902996 A3 CZ 1999-2996 19980217; KR 2000075536 A  
 KR 1999-707595 19990820; NO 9904060 A NO 1999-4060  
 19990823; NO 320188 B NO 1999-4060 19990823; US 6423532  
 B1 US 1999-367954 19990824; HU 2000000911 A2 HU  
 2000-911 19980217  
 FDT DE 59812031 G Based on EP 961762 A; ES 2227813 T3 Based on EP 961762  
 A; NO 320188 B Previous Publ NO 9904060 A; AU 9864981 A Based on WO  
 9838145 A; EP 961762 A1 Based on WO 9838145 A; CZ 9902996 A3 Based on  
 WO 9838145 A; HU 2000000911 A2 Based on WO 9838145 A; KR 2000075536 A  
 Based on WO 9838145 A; JP 2001513067 W Based on WO 9838145 A; US  
 6423532 B1 Based on WO 9838145 A; EP 961762 B1 Based on WO 9838145 A;



DE 59812031 G Based on WO 9838145 A

PRAI EP 1997-810096 19970224

IC ICM C05F017-00; C05F009-00

IPCR B03B0009-00 [I,C]; B03B0009-06 [I,A]; B09B0003-00 [I,A]; B09B0003-00 [I,C]; C05F0017-00 [I,A]; C05F0017-00 [I,C]; C05F0009-00 [I,A]; C05F0009-00 [I,A]; C05F0009-00 [I,C]; C05F0009-00 [I,C]

AB WO 1998038145 A1 UPAB: 20060201

A biological- and thermal treatment for wastes, especially domestic refuse, is new in that a portion (27) of the waste (1) amenable to composting, is subjected instead, to anaerobic digestion (5, 28). Digested residues (34) so obtained, are dried without composting, to a dry matter fraction of 90%. Also claimed is a process to treat a fine fraction of the waste. This is counter washed (39) to remove adherent organics, producing inert material, with at most 5% dry organic matter. Its washing employs condensate (36), in a closed circuit.

**ADVANTAGE** - The process minimises the weight and volume of waste which must be sent to landfill. This reduces the costs of disposal, and benefits the environment. The quantity of dry matter in the final products is maximised. This means that trouble-free disposable- and recyclable materials are maximised. Anaerobic fermentation produces and recovers, a maximum of useful biogas for drying, unlike composting. The quantity of biogas is not only sufficient for this purpose; excess is available for electricity generation. Drying reduces the mass of material to be disposed of, below levels hitherto achievable.

ABDT WO1998038145

A biological- and thermal treatment for wastes, especially domestic refuse, is new in that a portion (27) of the waste (1) amenable to composting, is subjected instead, to anaerobic digestion (5, 28). Digested residues (34) so obtained, are dried without composting, to a dry matter fraction of 90%.

Also claimed is a process to treat a fine fraction of the waste. This is counter washed (39) to remove adherent organics, producing inert material, with at most 5% dry organic matter. Its washing employs condensate (36), in a closed circuit.

#### ADVANTAGE

The process minimises the weight and volume of waste which must be sent to landfill. This reduces the costs of disposal, and benefits the environment. The quantity of dry matter in the final products is maximised. This means that trouble-free disposable- and recyclable materials are maximised. Anaerobic fermentation produces and recovers, a maximum of useful biogas for drying, unlike composting. The quantity of biogas is not only sufficient for this purpose; excess is available for electricity generation. Drying reduces the mass of material to be disposed of, below levels hitherto achievable.

#### PREFERRED PROCESS

Drying proceeds  $\leq 95$  wt% dry matter. The dried matter is graded and/or classified (12), obtaining various size fractions (13, 14), differing materials and/or different specific gravities or masses. The fermented material (34) retains at most, 30 wt% of bio-degradable dry matter before fermentation. The waste, possibly with a pre-sorted fraction is subjected to a separation process, preferably a treatment in an extrusion press (25), manual sorting, mechanical sorting, screening or a combination. This separates it into solid bodies (26) and pulp (27).

Pulp contains largely bio-degradable organics.

This is digested anaerobically (5; 28). The extrusion press operates at a final pressure of at least 700 bar. Biogas (7) arising is burned, preferably in a power generation unit (BHKW, 30). Recovered heat (33) and/or electricity is used for drying. The process is self sufficient in energy. Liquid (11) separated from the fermented residue (34) is evaporated to at least 35% dry matter. The fluid

portion before thickening (35) is neutral to slightly acid, especially pH 5-6, suppressing ammonia formation (and any odours released) during evaporation (35). (MSS)

FS CPI; GMPI  
MC CPI: D05-A04A

L60 ANSWER 10 OF 35 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN

AN 1998-144514 [13] WPIX Full-text

DNC C1998-047200 [13]

DNN N1998-114335 [13]

TI Rotatable apparatus used as composting drum, cement kiln or ball mill  
- has polygonal cross-section and divided internally into a series of transverse chambers and longitudinal sections

DC D15; D16; L02; P41

IN BENSON J M; SUNDARAM T R

PA (BENS-I) BENSON J M; (SUND-I) SUNDARAM T R

CYC 1

PI US 5716013 A 19980210 (199813)\* EN 21[9]

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ADT US 5716013 A US 1995-429496 19950426

PRAI US 1995-429496 19950426

IPCR B02C0017-00 [I,A]; B02C0017-00 [I,C]; B02C0017-18 [I,A]; C05F0017-02 [I,A]; C05F0017-02 [I,C]

AB US 5716013 A UPAB: 20060114

A rotatable apparatus comprises an elongate vessel (8) rotatable about its longitudinal axis. It has a polygonal cross-section and is divided into a number of transverse chambers and longitudinal sections. Material is fed into an inlet (10) and removed via outlets (29). Fresh air is introduced into the vessel and spent air is removed. Electrical power and signals can enter and leave the apparatus. Water is introduced into the vessel. Sensors monitor conditions at various points along the apparatus. A programmable controller connected to the sensors monitors and controls the conditions within the apparatus. The vessel is rotated either with its axis of rotation horizontal or at an angle inclined by up to ten degrees to the horizontal. Material is continuously loaded into and unloaded from the apparatus.

USE - The vessel is claimed for the composting of bio- degradable organic waste, e.g. municipal solid waste, yard waste or sewage sludge. It is also described as being suitable for use as a cement kiln or ball mill.

ADVANTAGE - The apparatus composts material in such a way that the formation of odorous and/or explosive gases is minimised. It can be economically constructed on site and operated cost-effectively.

ABDT US5716013

A rotatable apparatus comprises an elongate vessel (8) rotatable about its longitudinal axis. It has a polygonal cross-section and is divided into a number of transverse chambers and longitudinal sections. Material is fed into an inlet (10) and removed via outlets (29). Fresh air is introduced into the vessel and spent air is removed. Electrical power and signals can enter and leave the apparatus. Water is introduced into the vessel. Sensors monitor conditions at various points along the apparatus. A programmable controller connected to the sensors monitors and controls the conditions within the apparatus. The vessel is rotated either with its axis of rotation horizontal or at an angle inclined by up to ten degrees to the horizontal. Material is continuously loaded into and unloaded from the apparatus.

USE

The vessel is claimed for the composting of bio- degradable organic waste, e.g. municipal solid waste, yard waste or sewage sludge. It is also described as being suitable for use as a cement kiln or ball mill.

ADVANTAGE

The apparatus composts material in such a way that the formation of odorous and/or explosive gases is minimised. It can be economically constructed on site and operated cost-effectively.

#### PREFERRED APPARATUS

The transverse chambers each have a polygonal cross-section, preferably triangular. The vessel preferably has a hexagonal transverse cross-section, in which case six transverse triangular chambers can be formed at two or more longitudinal sections of the vessel. The vessel is made from plates which form its outside, the internal transverse chambers and bulkheads or transfer doors between longitudinal sections. Circular rings are attached to the exterior of the vessel via gusset plates which are spaced to support the vessel and to allow it to rotate by providing force to the rings. A dual rotary joint is attached to the periphery of the vessel for simultaneous input of fresh air and exhausting of stale air. Air is supplied to each chamber to maintain aerobic conditions. Preferably the volume, velocity and temperature of the air is remotely controlled. The vessel has a diameter of more than fifteen feet. The sensors monitor temperature and gaseous content of the chambers.

FS CPI; GMPI

MC CPI: D04-B10; L02-A; L02-C02

L60 ANSWER 11 OF 35 WPIX COPYRIGHT 2007

THE THOMSON CORP on STN

AN 1999-076707 [07] WPIX Full-text

DNC C1999-023335 [07]

DNN N1999-056323 [07]

TI Solid fuel manufacturing method - involves performing anaerobic treatment of organic refuse to isolate inseparable impurity which is then mixed with anaerobic treatment sludge and casting obtained mixture to get solid fuel

DC H09; P43

IN SUZUKI T; YAMADA N

PA (EBAR-C) EBARA CORP

CYC 1

PI JP 10316982 A 19981202 (199907)\* JA 4[2]

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ADT JP 10316982 A JP 1997-144586 19970520

PRAI JP 1997-144586 19970520

IPCR B09B0003-00 [I,A]; B09B0003-00 [I,C]; C10L0005-40 [I,C]; C10L0005-42 [I,A]; C10L0005-44 [I,A]; C10L0005-46 [I,A]

AB JP 10316982 A UPAB: 20060114

The organic refuse or the general waste containing organic refuse (1) is subjected to biodegradation by performing anaerobic treatment, for isolation of inseparable impurity (8). The anaerobic treatment sludge (7) after separation from the remnant treatment liquid (4) is mixed with the separated impurity (8). The moisture in the mixture is adjusted and then cast to get the solid fuel (21), using a compression molding machine (20).

USE - For use in electric power generation.

ADVANTAGE - Reduces installation and processing expense. Is burnt with stable heating value. Suppresses generation of unpleasant smell in reservoir.

ABDT JP10316982

The organic refuse or the general waste containing organic refuse (1) is subjected to biodegradation by performing anaerobic treatment, for isolation of inseparable impurity (8). The anaerobic treatment sludge (7) after separation from the remnant treatment liquid (4) is mixed with the separated impurity (8). The moisture in the mixture is adjusted and then cast to get the solid fuel (21), using a compression molding machine (20).

USE

For use in electric power generation.

#### ADVANTAGE

Reduces installation and processing expense. The fuel has a constant calorific value. Suppresses generation of unpleasant smell in reservoir.

FS CPI; GMPI

MC CPI: H09-F01

L60 ANSWER 12 OF 35 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN

AN 1998-434001 [37] WPIX Full-text

DNC C1998-131378 [37]

TI Regenerated plastic moulding - prepared by moulding a mixture of waste plastic and waste organic material.

DC A35; A92; H09

IN HORIE I; OKAMOTO K; YOSHIDA M

PA (OKAM-I) OKAMOTO K; (OKAE-C) OKAMOTO KAGAKU KK

CYC 1

PI JP 10182849 A 19980707 (199837)\* JA 8[9]

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ADT JP 10182849 A JP 1997-295646 19971028

PRAI JP 1996-291937 19961101

IPCR B29B0017-00 [I,A]; B29B0017-00 [I,C]; B29B0017-04 [I,A]; B29B0017-04 [I,C]; B29C0041-02 [I,C]; B29C0041-20 [I,A]; B29K0101-00 [N,A]; B29K0105-26 [N,A]; B29L0009-00 [N,A]; C08J0011-00 [I,A]; C08J0011-00 [I,C]; C08J0005-00 [I,A]; C08J0005-00 [I,C]; C10L0005-40 [I,C]; C10L0005-48 [I,A]

AB JP 10182849 A UPAB: 20050522

A regenerated plastic molding comprises moulding unitedly a mixture consisting mainly of waste plastic and waste organic substance.

USE - The regenerated plastic molding is useful for e.g. vessel or flower pot and also can be used as fuel.

ADVANTAGE - Waste plastic and waste organic substance can be effectively reutilised by the invention. As the combustion calorie of the regenerated plastic molding can be controlled by changing the ratio of waste plastic and waste organic substance, the molding can be used as solid fuel or a liquid fuel by mixing it with waste oil. Biodegradability can be imparted to the regenerated plastic molding.

ABDT JP10182849

A regenerated plastic molding comprises moulding unitedly a mixture consisting mainly of waste plastic and waste organic substance.

#### USE

The regenerated plastic molding is useful for e.g. vessel or flower pot and also can be used as fuel.

#### ADVANTAGE

Waste plastic and waste organic substance can be effectively reutilised by the invention. As the combustion calorie of the regenerated plastic molding can be controlled by changing the ratio of waste plastic and waste organic substance, the molding can be used as solid fuel or a liquid fuel by mixing it with waste oil. Biodegradability can be imparted to the regenerated plastic molding.

#### EXAMPLE

A regenerated plastic molding was prepared by foaming and injection-molding a mixture of polyethylene terephthalate(used as PET bottle), coconut husk powder and gelatin of 4.5:4.5:1 in weight ratio at e.g. 160°C. The moulding had light cream colour smooth surface, good appearance and no bad smell, and was useful for pot, fish-breeding reef or box.

EMBODIMENT

Waste plastic is e.g. polystyrene, polypropylene or polyethylene, pref. polyethylene terephthalate. Waste organic substance is e.g. wheat bran, coconut husk, pulp dust, used paper or cow bone. Gel-form organic substance is e.g. gelatin or agar-agar. The form of the materials is pref. pellet, granule or powder. The mixing ratio of waste plastic to waste organic substance is 2:8-8:2, pref. 4:6-6:4.

## PREFERRED CONDITION

Regenerated plastic molding is obtained by molding unitedly a mixture mainly consisting of waste plastic, waste organic substance and gel-form organic substance. On the surface of the molding, a mixed layer consisting mainly of waste plastic and waste organic substance is formed.

FS

CPI

MC

CPI: A11-B01; A11-C03; A11-C07; H09-F01

L60 ANSWER 13 OF 35 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN

AN 1997-011672 [01] WPIX Full-text

DNC C1997-003127 [01]

TI Combined treatment of domestic sewage and biodegradable waste - uses locally available natural energy, e.g. solar, and energy produced by the system; sewage and waste undergo tert. treatment

DC D15; D16

IN BRAUN U

PA (BRAU-I) BRAUN U

CYC 68

PI WO 9634841 A1 19961107 (199701)\* EN 36[20]

&lt;--

AU 9658126 A 19961121 (199711) EN

&lt;--

EP 823887 A1 19980218 (199811) EN

&lt;--

BR 9608306 A 19991130 (200014) PT

&lt;--

MX 9708423 A1 19980801 (200014) ES

&lt;--

EP 823887 B1 20020320 (200221) EN

&lt;--

DE 69619975 E 20020425 (200235) DE

&lt;--

MX 214331 B 20030520 (200418) ES

ADT WO 9634841 A1 WO 1996-EP1831 19960502; AU 9658126 A AU 1996-58126 19960502; BR 9608306 A BR 1996-8306 19960502; DE 69619975 E DE 1996-69619975 19960502; EP 823887 A1 EP 1996-919655 19960502; EP 823887 B1 EP 1996-919655 19960502; DE 69619975 E EP 1996-919655 19960502; EP 823887 A1 WO 1996-EP1831 19960502; BR 9608306 A WO 1996-EP1831 19960502; EP 823887 B1 WO 1996-EP1831 19960502; DE 69619975 E WO 1996-EP1831 19960502; MX 214331 B WO 1996-EP1831 19960502; MX 9708423 A1 MX 1997-8423 19971031; MX 214331 B MX 1997-8423 19971031

FDT DE 69619975 E Based on EP 823887 A; AU 9658126 A Based on WO 9634841 A; EP 823887 A1 Based on WO 9634841 A; BR 9608306 A Based on WO 9634841 A; EP 823887 B1 Based on WO 9634841 A; DE 69619975 E Based on WO 9634841 A; MX 214331 B Based on WO 9634841 A

PRAI EP 1995-111851 19950727

LK 1995-10801 19950502

LK 1995-10830 19950614

WO 1996-EP1831 19960502

IC ICM C02F003-04; C05F017-00

IPCR C02F0003-04 [I,A]; C02F0003-04 [I,C]; C02F0003-28 [I,A]; C02F0003-28 [I,C]; C05F0017-00 [I,A]; C05F0017-00 [I,C]; C05F0007-00 [I,A]; C05F0007-00 [I,C]; C12M0001-107 [I,A]; C12M0001-107 [I,C]

AB WO 1996034841 A1 UPAB: 20050514

A combined treatment of sewage and/or waste water, sludges and shredded domestic biodegradable waste comprises, after physical pre-treatment, e.g. grease removal: (i) a first waste water and/or sewage liquid-solid separation; (ii) a prim. biological treatment; (iii) a second waste water liquid-solid separation; (iv) a sec. biological treatment; (v) anaerobic hydrological treatment of the sludges produced and the waste, after removal of wooden components and (vi) anaerobic methane fermenting treatment of the sludges and the waste. Also claimed is a device for carrying out the above method which provides changing sludge levels, due to the accumulation and release of the biogas in the anaerobic fermentation reactor, to transport the floating sludge to a blow-off device.

The device is pref. a fixed dome plant with a funnel as bottom to avoid the accumulation of solids. The device is pref. built around and/or under a liquid-solid separator but separated by a tank in between. The tank pref. functions as an hydrolysis and/or inlet device. The liquid-solid separator is pref. a Dortmund Tank. Prim. sewage sludge and sec. bacterial sludge are pref. sedimented in one Dortmund Tank, divided vertically by a wall. The prim. waste water treatment device is pref. on the separator. The device may be in the form of a closed tower with pref. only one air inlet. The device pref. has combined denitrification and phosphorous retention with an anaerobic fixed bed or soil filter made of Goethite, Hematite or other minerals iron-active surfaces. The device is pref. and area covered with a transparent cover with a slope upwards towards the direction of the intended airflow.

USE - The method is used for treating the organic waste of domestic settlements, both liquid and solid.

ADVANTAGE - The treatment of domestic sewage and anaerobic treatment of domestic biodegradable waste are combined in one device. There is maximised use of solar thermal energy and the gassing pressure energy of the biogas. There is low space requirement, and low construction and running costs. ABDT WO9634841

A combined treatment of sewage and/or waste water, sludges and shredded domestic biodegradable waste comprises, after physical pre-treatment, e.g. grease removal:

(i) a first waste water and/or sewage liquid-solid separation;

(ii) a prim. biological treatment;

(iii) a second waste water liquid-solid separation;

(iv) a sec. biological treatment;

(v) anaerobic hydrological treatment of the sludges produced and the waste, after removal of wooden components and

(vi) anaerobic methane fermenting treatment of the sludges and the waste.

Also claimed is a device for carrying out the above method which provides changing sludge levels, due to the accumulation and release of the biogas in the anaerobic fermentation reactor, to transport the floating sludge to a blow-off device.

USE

The method is used for treating the organic waste of domestic settlements, both liquid and solid.

ADVANTAGE

The treatment of domestic sewage and anaerobic treatment of domestic biodegradable waste are combined in one device. There is maximised use of solar thermal energy and the gassing pressure energy of the biogas. The space requirement, and construction and running costs are all low.

PREFERRED METHOD

The liquid-solid separation is pref. sedimentation. The prim.

biological treatment is pref. aerobic treatment. The sec. biological treatment is pref. anaerobic. There is an optional liquid-solid separation between the anaerobic hydrolytical sludge treatment and the methane fermentation. There may be a solid-liquid separation treatment after the methane fermentation. There is pref. aerobic draining and/or drying of the fermented material obtd. from the methane fermentation. The dried fermented matter is then pref. composted with the removed wooden components.

A liquid flow is pref. provided, caused by the chimney effect, for enhancing the activity of the prim. waste water treatment and for minimising the development of offensive odours. The floating sludge blankets are move/removed in/from an anaerobic reactor by applying gas pressure exerted by the biogas produced by the sludges. The chimney effect is pref. enhanced by directing air warmed by the greenhouse effect generated in the draining/drying device into the liquid flow.

#### PREFERRED DEVICE

The device is pref. a fixed dome plant with a funnel as bottom to avoid the accumulation of solids. The device is pref. built around and/or under a liquid-solid separator but separated by a tank in between. The tank pref. functions as an hydrolysis and/or inlet device.

The liquid-solid separator is pref. a Dortmund Tank. Prim. sewage sludge and sec. bacterial sludge are pref. sedimented in one Dortmund Tank, divided vertically by a wall.

The prim. waste water treatment device is pref. on the separator in the form of a closed tower with pref. only one air inlet. The device pref. has combined denitrification and phosphorous retention with an anaerobic fixed bed or soil filter made of Goethite, Hematite or other minerals iron-active surfaces. It is covered with a transparent cover with a slope upwards towards the direction of the intended airflow and is connected to  $\geq 1$  foreign energy consuming device and utilises 0.05 to 0.5m<sup>2</sup> per population equivalent.

FS CPI

MC CPI: D04-A01B; D04-A01J; D04-B10; D05-A04A

L60 ANSWER 14 OF 35 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN

AN 1996-335980 [34] WPIX Full-text

DNC C1996-106089 [34]

DNN N1996-283177 [34]

TI Digesting solid waste material from e.g. farms using mobile solids digestion vessel - collects waste from source and transports to site where active bacteria derived from organic material undergoing anaerobic bacterial digestion can be added

DC C04; D14; D15; D16; P43

IN REYNELL C P

PA (REYN-I) REYNELL C P

CYC 68

PI GB 2297280 A 19960731 (199634)\* EN 17[2]

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WO 9623054 A1 19960801 (199636) EN 25[3]

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AU 9644938 A 19960814 (199650) EN

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EP 805849 A1 19971112 (199750) EN

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NZ 300252 A 19971124 (199802) EN

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AU 691391 B 19980514 (199831) EN

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US 5958756      A  19990928 (199947) # EN
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EP 805849      B1 20000405 (200021)  EN
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DE 69607596    E  20000511 (200030)  DE
<--
ES 2147362     T3 20000901 (200047)  ES
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ADT GB 2297280 A GB 1995-1637 19950127; AU 9644938 A AU 1996-44938 19960126; AU 691391 B AU 1996-44938 19960126; DE 69607596 E DE 1996-69607596 19960126; EP 805849 A1 EP 1996-901067 19960126; EP 805849 B1 EP 1996-901067 19960126; DE 69607596 E EP 1996-901067 19960126; ES 2147362 T3 EP 1996-901067 19960126; NZ 300252 A NZ 1996-300252 19960126; WO 9623054 A1 WO 1996-GB184 19960126; AU 9644938 A WO 1996-GB184 19960126; EP 805849 A1 WO 1996-GB184 19960126; NZ 300252 A WO 1996-GB184 19960126; EP 805849 B1 WO 1996-GB184 19960126; DE 69607596 E WO 1996-GB184 19960126; US 5958756 A WO 1996-GB184 19960126; US 5958756 A US 1997-875461 19970728

FDT AU 691391 B Previous Publ AU 9644938 A; DE 69607596 E Based on EP 805849 A; ES 2147362 T3 Based on EP 805849 A; AU 9644938 A Based on WO 9623054 A; EP 805849 A1 Based on WO 9623054 A; NZ 300252 A Based on WO 9623054 A; AU 691391 B Based on WO 9623054 A; EP 805849 B1 Based on WO 9623054 A; DE 69607596 E Based on WO 9623054 A; US 5958756 A Based on WO 9623054 A

PRAI GB 1995-1637 19950127  
US 1997-875461 19970728

IC ICM C12M001-107

IPCR C05F0015-00 [I,A]; C05F0015-00 [I,C]; C12M0001-107 [I,A]; C12M0001-107 [I,C]; C12P0005-00 [I,C]; C12P0005-02 [I,A]; C12S0013-00 [I,A]; C12S0013-00 [I,C]

AB GB 2297280 A UPAB: 20060111

Solid waste material containing biodegradable solids is collected in a solids digestion vessel at a first location and transported in the vessel to a second location where there is a source of organic material undergoing anaerobic bacterial digestion in a fluid phase digestion stage which produces a fluid fraction containing active bacteria. At least part of the fluid fraction from the fluid phase digestion stage is fed into the solids digestion vessel to provide at least part of a fluid phase in a solids digestion stage, at least part of the environmentally more acceptable solids fraction from the solids digestion stage being recovered. Also claimed is the mobile solids digestion vessel used in the process for digesting solid waste material, the vessel having  $\geq 1$  connection for fluids.

USE - The process and the vessel can be used for treating regularly produced solid organic waste from abattoirs, farms and food processing plants so that it may be discharged into the environment.

ADVANTAGE - Use of the process and vessel obviates the need for a skip or similar for transporting offensive, smelly, untreated waste, the waste being loaded directly into the vessel at source so as to reduce the amount of handling necessary and the vessel being sealed to prevent the escape of odours. The treated waste may be unloaded from the vessel at leisure and replaced with a new load.

ABDT GB2297280

Solid waste material containing biodegradable solids is collected in a solids digestion vessel at a first location and transported in the vessel to a second location where there is a source of organic material undergoing anaerobic bacterial digestion in a fluid phase digestion stage which produces a fluid fraction containing active bacteria.



At least part of the fluid fraction from the fluid phase digestion stage is fed into the **solids** digestion vessel to provide at least part of a fluid phase in a **solids** digestion stage, at least part of the environmentally more acceptable **solids** fraction from the **solids** digestion stage being recovered. Also claimed is the mobile **solids** digestion vessel used in the process for digesting **solid** waste material, the vessel having  $\geq 1$  connection for fluids.

## USE

The process and the vessel can be used for treating regularly produced **solid organic waste** from abattoirs, farms and food processing plants so that it may be discharged into the environment.

## ADVANTAGE

Use of the process and vessel obviates the need for a skip or similar for transporting offensive, **smelly**, untreated waste, the waste being loaded directly into the vessel at source so as to reduce the amount of handling necessary and the vessel being sealed to prevent the escape of **odours**.

The treated waste may be unloaded from the vessel at leisure and replaced with a new load.

## PREFERRED APPARATUS

The mobile **solids** digestion vessel includes a **heater** for heating the waste.

## PREFERRED PROCESS

The **solids** digestion vessel is transported away from the second location back to the first location and returned to the producer. The waste is subjected to an additional stage of aerobic digestion.

The digestion process is carried out at 20-80 (pref. 40-65) °C and it is heated while being transported to the second location.

A number of **solids** digestion vessels are connected to a single liquid digester. All the fluid connections between the **solids** digestion vessel and the fluid phase digestion source are carried by a single connector. (LV)

FS CPI; GMPI

MC CPI: C04-D03; C11-A01; D03-J; D04-A01J; D05-A04A

L60 ANSWER 15 OF 35 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN

AN 1995-036169 [05] WPIX Full-text

DNC C1995-016192 [05]

TI Co-composting appts. for treating **solid** waste and sewage sludge - has vessel(s) for mixing ingredients, **temperature** control and maintaining mixture in contact with gases and **water**

DC C04; D15; D16

IN ARRAU A H; KRANIS R

PA (ARRA-I) ARRAU A H; (BIOW-N) BIO-WASTE TECHNOLOGIES INT LTD; (KRAN-I) KRANIS R

CYC 53

PI WO 9429014 A1 19941222 (199505)\* EN 44[8]

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BR 9303619 A 19950110 (199509) PT

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AU 9471087 A 19950103 (199521) EN

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EP 703824 A1 19960403 (199618) EN [1]

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US 5534437 A 19960709 (199633) EN 15[8]

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BR 9406816 A 19960723 (199635) PT

&lt;--

EP 703824 A4 19971119 (199840) EN

&lt;--

ADT WO 9429014 A1 WO 1994-US6749 19940614; US 5534437 A Cont of US 1993-77238 19930614; BR 9303619 A BR 1993-3619 19930830; US 5534437 A Cont of US 1994-251515 19940606; AU 9471087 A AU 1994-71087 19940614; BR 9406816 A BR 1994-6816 19940614; EP 703824 A1 EP 1994-920213 19940614; EP 703824 A4 EP 1994-920213 19940614; EP 703824 A1 WO 1994-US6749 19940614; BR 9406816 A WO 1994-US6749 19940614; US 5534437 A US 1995-409542 19950324

FDT AU 9471087 A Based on WO 9429014 A; EP 703824 A1 Based on WO 9429014 A; BR 9406816 A Based on WO 9429014 A

PRAI US 1994-251515 19940606  
US 1993-77238 19930614  
US 1995-409542 19950324

IPCR C05F0015-00 [I,A]; C05F0015-00 [I,C]; C05F0017-00 [I,A]; C05F0017-00 [I,C]; C05F0017-02 [I,A]; C05F0017-02 [I,C]; C05F0009-00 [I,A]; C05F0009-00 [I,C]

AB WO 1994029014 A1 UPAB: 20050701

Solid organic waste and sludge are admitted through an opening into a vessel where they are mixed together. The vessel also has a gas input, temperature control, a gas outlet and an outlet for a biodegradable prod. First growth conditions are imposed on the mixture These are a temperature of 165-200°F, a gaseous water concentration of 25-40% and an oxygen gas concentration which promotes the growth of thermophilic microorganisms to produce a thermophilic biodegradation prod. Should the prod. contain insufficient mesophilic microorganisms; a second mixture is formed of a mesophilic microorganism and the thermophilic biodegradation prod. Second growth conditions are imposed on this mixture These are a temperature of 145-164°F, a gaseous water concentration of 25-45% and an oxygen gas concentration sufficient to promote the growth of one or more mesophilic microorganisms to form a mesophilic biodegradation prod.

USE - Solid organic waste materials, e.g. agricultural, industrial or municipal organic solid waste are co-processed with sludge derived from agricultural, industrial or municipal sources. The resulting prod. is suitable for application to soil.

ADVANTAGE - The process is completed in a continuous 3-5 day period in a single vessel. The use of a single vessel eliminates rodents, flies and odours.  
ABDT WO9429014

Solid organic waste and sludge are admitted through an opening into a vessel where they are mixed together. The vessel also has a gas input, temperature control, a gas outlet and an outlet for a biodegradable prod. First growth conditions are imposed on the mixture These are a temperature of 165-200°F, a gaseous water concentration of 25-40% and an oxygen gas concentration which promotes the growth of thermophilic microorganisms to produce a thermophilic biodegradation prod.

Should the prod. contain insufficient mesophilic microorganisms, a second mixture is formed of a mesophilic microorganism and the thermophilic biodegradation prod. Second growth conditions are imposed on this mixture These are a temperature of 145-164°F, a gaseous water concentration of 25-45% and an oxygen gas concentration sufficient to promote the growth of one or more mesophilic microorganisms to form a mesophilic biodegradation prod.

USE

Solid organic waste materials, e.g.

agricultural, industrial or municipal **organic solid waste** are co-processed with sludge derived from agricultural, industrial or municipal sources. The resulting prod. is suitable for application to soil.

#### ADVANTAGE

The process is completed in a continuous 3-5 day period in a single vessel. The use of a single vessel eliminates rodents, flies and odours.

#### PREFERRED PROCESS

In the event of the mesophilic biodegradation prod. containing insufficient microorganisms from a third gp., the prod. is mixed with a supply of this third gp. comprising actinomycetes. Third growth conditions are imposed on the prod. These are a temperature of 110-144°F, gaseous water concentration of 25-45% and sufficient oxygen gas concentration to promote the growth of the actinomycetes. The resulting biodegradation forms an organic compost suitable for agricultural applications.

The temperature, and water and oxygen concns. are maintained by the flow of gases through the vessel.

A scrubber at the gas outlet removes noxious gases during a period in which thermophilic growth conditions are imposed. Pref. the vessel is rotated. It includes adjustable baffles with planar surfaces for imparting direction and movement to the vessel contents. (KKG)

FS CPI

MC CPI: C04-A08; C04-A10; C04-B04B; C04-B04L; C04-B04M; C04-D02; D04-A01J; D04-A01K; D05-A04A

L60 ANSWER 16 OF 35 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN

AN 1983-779786 [40] WPIX Full-text

DNC C1983-095685 [21]

TI **Organic waste** treatment by acid fermentation - heat treatment then methane fermentation, generation of odours is suppressed

DC D15

IN ENDO K; KIRIYAMA K; MATSUO Y

PA (EBAI-C) EBARA INFILCO KK

CYC 1

PI JP 58143894 A 19830826 (198340)\* JA 5[1]

<--

JP 02000999 B 19900110 (199005) JA

<--

ADT JP 58143894 A JP 1982-27162 19820222; JP 02000999 B JP 1982-27162 19820222

PRAI JP 1982-27162 19820222

IPCR C02F0011-04 [I,A]; C02F0011-04 [I,C]

AB JP 58143894 A UPAB: 20050422

**Organic wastes** e.g. municipal dust, industrial wastes and sludge resulting in the treatment of sewage and waste water etc. is subjected to acid fermentation treatment, heat-treated at pH less than 5, and then subjected to methane fermentation treatment.

**Biodegradation of organic wastes** is accelerated and amount of CH<sub>4</sub> to be generated is increased. Methane fermentation residue exhibits easy solid liquid separatability. Generation of odorous gas is suppressed and separated liquor is discoloured. The heat treatment is pref. carried-out at higher than 175 deg.C to improve the dewatering filtration rate and the methane fermentation efficiency.

FS CPI

MC CPI: D04-B11; D05-A04

L60 ANSWER 17 OF 35 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN

AN 1980-34424C [19] WPIX Full-text  
 TI Converting **organic waste** to animal feed - in  
 electrochemical cell, with collection of hydrogen to supply cell  
 energy requirements  
 DC C03; D13; D15; J03; X25  
 IN DAY D L; STEINBERG M P  
 PA (DAYD-I) DAY D L  
 CYC 1  
 PI US 4200505 A 19800429 (198019)\* EN  
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 ADT US 4200505 A US 1979-26666 19790403  
 IPCR A23K0001-10 [I,A]; A23K0001-10 [I,C]; C02F0001-46 [I,A]; C02F0001-46  
 [I,C]; C02F0003-12 [I,A]; C02F0003-12 [I,C]; C02F0003-20 [I,A];  
 C02F0003-20 [I,C]  
 AB US 4200505 A UPAB: 20050418  
 Conversion of **organic waste** comprises passing an aqueous **biodegradable organic**  
 compsn. containing aerobic bacteria and having total **solids** content  $\geq 0.3$   
 weight% and BOD  $\geq 1\text{g/l}$ , to an electrolytic cell. Here bubbles of H<sub>2</sub> are  
 generated at the cathode by a d.c. current but the anode is kept free of O<sub>2</sub>  
 bubbles. Treatment and growth of bacteria are continued until the mass is free  
 of odour of the starting material, then recovered as bacteria-rich effluent.  
 At least some of the H<sub>2</sub> generated is recovered to provide some of the  
 electrical needs of the cell (especially by conversion in a fuel cell). The  
 feed is pref. animal wastes and effluent is recovered continuously as  
 overflow. Prod. is used as an animal feed supplement. The process requires  
 less power than known waste-to-protein conversion methods and simultaneously  
 overcomes odour and disposal problems.  
 FS CPI; EPI  
 MC CPI: C04-B02B; C04-B04B; C12-L09; D03-G02; D03-G03; D04-B11; J03-B  
 EPI: X25-N

L60 ANSWER 18 OF 35 WPIX COPYRIGHT 2007 THE THOMSON CORP on STN  
 AN 1979-20017B [11] WPIX Full-text  
 TI Purifying **odorous waste gases**, especially from **water**  
 treatment - using aqueous suspension of biological **solids** and  
 active carbon  
 DC D15; D22; J01; P34  
 IN BURANT W; COPA W M  
 PA (STER-C) STERLING DRUG INC  
 CYC 9  
 PI BE 870281 A 19790307 (197911)\* FR  
 <--  
 GB 2004198 A 19790328 (197913) EN  
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 DE 2839173 A 19790329 (197914) DE  
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 NL 7809138 A 19790319 (197914) NL  
 <--  
 JP 54053670 A 19790427 (197923) JA  
 <--  
 FR 2403102 A 19790518 (197925) FR  
 <--  
 ZA 7804907 A 19790709 (197938)# EN  
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 CA 1104795 A 19810714 (198137) EN  
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 CH 625132 A 19810915 (198142) DE  
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 DE 2839173 C 19901115 (199046) DE  
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NL 190269 B 19930802 (199333) NL 5[0]

&lt;--

ADT ZA 7804907 A ZA 1978-4907 19780829; NL 190269 B NL  
1978-9138 19780907

PRAI US 1977-833465 19770915

IC IC B01D053-02; B01D053-10; B01D053-14

IPCR B01D [I,S]; B01D0047-00 [I,A]; B01D0047-00 [I,C]; B01D0053-38 [I,A];  
B01D0053-38 [I,C]; B01D0053-77 [I,A]; B01D0053-77 [I,C]; B01D0053-84  
[I,A]; B01D0053-84 [I,C]; C01B [I,S]; C02F0003-12 [I,A]; C02F0003-12  
[I,C]

AB BE 870281 A UPAB: 20050628

Process for eliminating a substantial proportion of organic and/or mineral volatile substances from an odorous gas current comprises passing it into  $\geq 1$  purifier comprising an aqueous suspension of biological solid materials and active carbons at concns of 50-20,000 mg/l for each component. The pref. concns. are 1000-5000mg/l and 5000-16,000 mg/l respectively. The process is especially applied to waste gases containing organic oxygen cpds. hydrogen sulphide and/or mercaptans, ammonia and/or amines.

The process is applied to industrial waste gases. The use of the activated sludge and the active carbon together gives a synergistic effect.

FS CPI; GMPI

MC CPI: D09-A02; J01-E02B

=&gt; d 19-29 ibib ed abs hitind

L60 ANSWER 19 OF 35 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2005:1177555 HCAPLUS Full-text

TITLE: Garbage processing machine [Machine Translation].

INVENTOR(S): Nakao, Hiroshi; Tsuzuki, Shinichi; Morishige;  
Koda, Atsushi; Yoshikawa, Tatsuo; Tomita, Hideo;  
Hatano, Takeshi

PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 10 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO.             | KIND | DATE     | APPLICATION NO. | DATE     |
|------------------------|------|----------|-----------------|----------|
| JP 2005305348          | A    | 20051104 | JP 2004-127817  | 20040423 |
| PRIORITY APPLN. INFO.: |      |          | JP 2004-127817  | 20040423 |

ED Entered STN: 06 Nov 2005

AB [Machine Translation of Descriptors]. While holding down the occurrence of **smell**, it offers the garbage processing machine which can activate the microbe quickly. It possesses the humidity regulation expedient which adjusts the humidity inside aforementioned processing tank 1a the organic matter the humidity sensor according to the output from of 11 which inspects the humidity inside processing tank 1a and aforementioned processing tank 1a which receive decompose microbial carrier 1b and the aforementioned humidity sensor 11 (not to illustrate), from start of use of garbage processing machine itself 1 in order to keep the humidity inside aforementioned processing tank 1a in the usual compared to raising, the aforementioned humidity regulation expedient is controlled, " it starts specified period and, being something which does driving ", while activity of the operational early microbe is little, heating the temperature inside processing tank 1a In order to keep humidity in

raising without thing, because it controls, while holding down the occurrence of smell, it is something which can activate the microbe quickly.

IC ICM B09B003-00

L60 ANSWER 20 OF 35 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2005:54181 HCAPLUS Full-text

DOCUMENT NUMBER: 142:92343

TITLE: Continuous manufacture of hydrogen with Enterobacter from organic wastes

INVENTOR(S): Noike, Tatsuya; Yokoyama, Masashi; Kono, Takashi

PATENT ASSIGNEE(S): Takuma Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 12 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO.             | KIND | DATE     | APPLICATION NO. | DATE     |
|------------------------|------|----------|-----------------|----------|
| -----                  | ---- | -----    | -----           | -----    |
| JP 2005013045          | A    | 20050120 | JP 2003-179864  | 20030624 |
| PRIORITY APPLN. INFO.: |      |          | JP 2003-179864  | 20030624 |

ED Entered STN: 20 Jan 2005

AB Organic wastes such as okara are used for continuous fermentation of hydrogen and methane with Enterobacter in a medium where the soluble carbohydrate and protein is controlled at  $\geq 3000$  mg/l, and where ammonia-N is supplied. The continuous fermentation apparatus also contains methane-forming tank(s) for manufacture of methane and ammonia which can be recycled into the hydrogen fermentation tank. The method also gives organic acids such as butyric acid.

IC ICM C12P003-00

ICS B09B003-00; C02F003-28; C02F003-34; C12M001-107; C12R001-01

CC 16-5 (Fermentation and Bioindustrial Chemistry)

Section cross-reference(s): 52

ST hydrogen continuous manuf app carbohydrate protein concn

IT Culture media

Enterobacter

Enterobacter aerogenes

Enterobacter cloacae

Enterobacter sakazakii

Fermentation apparatus

Nitrogen sources, microbial

Wastes

(continuous manufacture of hydrogen with Enterobacter from organic wastes as fossil fuel substitute)

IT Fermentation

(continuous; continuous manufacture of hydrogen with Enterobacter from organic wastes as fossil fuel substitute)

IT Fuels

(fossil, substitute; continuous manufacture of hydrogen with Enterobacter from organic wastes as fossil fuel substitute)

IT Glycine max

(okara; continuous manufacture of hydrogen with Enterobacter from organic wastes as fossil fuel substitute)

IT Acids, preparation

(organic; continuous manufacture of hydrogen with Enterobacter from organic wastes as fossil fuel substitute)

IT Carbohydrates, biological studies

## Proteins

(soluble; continuous manufacture of hydrogen with Enterobacter from organic wastes as fossil fuel substitute)

IT 64-18-6P, Formic acid, preparation 64-19-7P, Acetic acid, preparation 74-82-8P, Methane, preparation 79-09-4P, Propionic acid, preparation 107-92-6P, Butyric acid, preparation 1333-74-0P, Hydrogen, preparation

(continuous manufacture of hydrogen with Enterobacter from org . wastes as fossil fuel substitute)

IT 7664-41-7, Ammonia, biological studies

(continuous manufacture of hydrogen with Enterobacter from org . wastes as fossil fuel substitute)

L60 ANSWER 21 OF 35 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2006:699100 HCAPLUS Full-text

DOCUMENT NUMBER: 145:123806

TITLE: Method for making magnetized compost

INVENTOR(S): Suh, Hee Dong

PATENT ASSIGNEE(S): S. Korea

SOURCE: Repub. Korean Kongkae Taeho Kongbo, No pp. given  
CODEN: KRXXA7

DOCUMENT TYPE: Patent

LANGUAGE: Korean

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO.             | KIND | DATE     | APPLICATION NO. | DATE     |
|------------------------|------|----------|-----------------|----------|
| -----                  | ---- | -----    | -----           | -----    |
| KR 2004035539          | A    | 20040429 | KR 2002-64728   | 20021022 |
| PRIORITY APPLN. INFO.: |      |          | KR 2002-64728   | 20021022 |

ED Entered STN: 19 Jul 2006

AB Provided is an economical method for making high-quality magnetized compost applicable to agricultural and horticultural crops, which reutilizes various organic wastes as resources. The method comprises the steps of: removing foreign materials, salts and water from organic waste; introducing the org . waste in a mixer; adding at least one mineral powder thereto, in such an amount that the total mineral content after fermentation and aging becomes 45 wt% or less; adding magnetite (Fe<sub>3</sub>O<sub>4</sub>) in such an amount that its content after fermentation and aging becomes 5-30 wt%; introducing at least one bulking agent for carrying out fermentation smoothly to the moisture content of 60 wt%, and agitating and mixing them; fermenting and aging for 30 days or more; separating and removing foreign materials to obtain an aged compost; introducing the aged compost into a mixer; adding a biodegradable resin as a binder, and agitating and mixing them; forming pellets from the compost; drying the pelletized compost to have the moisture content of 20-35 wt%; and magnetizing the dried and pelletized compost with 500 G or more at which point coercive force is effective.

IC ICM C05F015-00

CC 19-6 (Fertilizers, Soils, and Plant Nutrition)

L60 ANSWER 22 OF 35 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:781808 HCAPLUS Full-text

DOCUMENT NUMBER: 141:300537

TITLE: Anaerobic digestion of organic waste by methane fermentation with cellulolytic enzyme expressing bacteria

INVENTOR(S): Omiya, Kunio; Sakka, Kazuo; Kimura, Tetsuya; Morimoto, Kenji

PATENT ASSIGNEE(S): Japan Science and Technology Agency, Japan; Mie

SOURCE: University  
Jpn. Kokai Tokkyo Koho, 39 pp.  
CODEN: JKXXAF  
DOCUMENT TYPE: Patent  
LANGUAGE: Japanese  
FAMILY ACC. NUM. COUNT: 1  
PATENT INFORMATION:

| PATENT NO.             | KIND | DATE     | APPLICATION NO. | DATE     |
|------------------------|------|----------|-----------------|----------|
| JP 2004261144          | A    | 20040924 | JP 2003-56934   | 20030304 |
| PRIORITY APPLN. INFO.: |      |          | JP 2003-56934   | 20030304 |

ED Entered STN: 24 Sep 2004

AB A method for anaerobic digestion of **organic waste** by methane fermentation, utilizing microorganism transformed with cellulolytic enzyme gene ligated to the promoter region of a gene not subject to catabolite repression, is disclosed. Cellulase B gene or cellulase D gene of *Clostridium josui*, or *Ruminococcus albus* endoglucanase I gene, can be used. **Organic waste** is first subject to hydrogen fermentation under anaerobic condition, then to methane fermentation *Clostridium paraputrificum* M was transformed with *Clostridium josui* cellulase B, cellulase D, or *Ruminococcus albus* endoglucanase I gene to operably linked them to its hydrogenase gene promoter. Transformed *C. paraputrificum* was effective in decomposing raw garbage.

IC ICM C12N015-09

ICS B09B003-00; C02F011-04; C12N001-20; C12N001-21;  
C12R001-145

CC 60-1 (Waste Treatment and Disposal)

Section cross-reference(s): 3, 10

ST anaerobic digestion **org waste** cellulolytic enzyme;  
**org waste** anaerobic bacteria methane fermm

IT Municipal refuse

Solid wastes

Wastes

(anaerobic digestion of **organic waste** by methane fermentation with cellulolytic enzyme expressing bacteria)

IT Solid wastes

(cellulosic; anaerobic digestion of **organic waste** by methane fermentation with cellulolytic enzyme expressing bacteria)

IT **Carbohydrates**, processes

(demonstration plant for thermophilic anaerobic dry digestion of organic fraction of municipal refuse, Kyoto, Japan)

IT Wastes

(domestic; anaerobic digestion of **organic waste** by methane fermentation with cellulolytic enzyme expressing bacteria)

IT Catabolite repression, **microbial**

(promoter region of a gene not subject to, cellulolytic enzyme gene ligated to; demonstration plant for thermophilic anaerobic dry digestion of organic fraction of municipal refuse, Kyoto, Japan)

IT 761136-04-3 761136-05-4 761136-06-5 761136-07-6 761136-08-7  
761136-09-8 761136-10-1 761136-11-2 761136-12-3 761136-13-4  
761136-14-5 761136-15-6

(unclaimed nucleotide sequence; anaerobic digestion of **org waste** by methane fermentation with cellulolytic enzyme expressing bacteria)

IT 761136-16-7 761136-17-8 761136-18-9 761136-19-0

(unclaimed protein sequence; anaerobic digestion of **organic waste** by methane fermentation with cellulolytic enzyme expressing bacteria)



L60 ANSWER 23 OF 35 HCAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2003:319794 HCAPLUS Full-text  
 DOCUMENT NUMBER: 138:308690  
 TITLE: Process for ozonating and converting organic materials into useful products  
 INVENTOR(S): Greene, Annel K.  
 PATENT ASSIGNEE(S): Clemson University, USA  
 SOURCE: PCT Int. Appl., 30 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

| PATENT NO.  | KIND | DATE     | APPLICATION NO. | DATE       |
|---|------|----------|-----------------|------------|
| WO 2003033181   | A1   | 20030424 | WO 2002-US33260 | 20021018   |
| W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW<br>RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG |      |          |                 |            |
| US 2003077770   | A1   | 20030424 | US 2001-983012  | 20011018   |
| US 6835560  | B2   | 20041228 |                 |            |
| AU 2002335847   | A1   | 20030428 | AU 2002-335847  | 20021018   |
| EP 1444058  | A1   | 20040811 | EP 2002-770612  | 20021018   |
| R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK   |      |          |                 |            |
| PRIORITY APPLN. INFO.:  |      |          | US 2001-983012  | A 20011018 |
|   |      |          | WO 2002-US33260 | W 20021018 |

ED Entered STN: 25 Apr 2003

AB A process for converting organic waste materials into usable products and products thereof is disclosed. According to the process, organic waste materials are contacted with ozone thereby converting said waste material to a substrate or medium. The organic waste materials may include lignocellulosic materials, proteinaceous materials, carbohydrate materials, chitin waste materials, household garbage, restaurant waste, agricultural and forestry waste, petroleum or chemical manufacturing waste, or wastewater; any org.-bearing compound that can be oxidized may be used as a starting material. The substrate is a product of the process and it may be further contacted with organisms for bioconversion to further products. The organisms can include bacteria, yeast, fungi, plant cells, animal cells and genetically engineered organisms which are selected for their ability to bioconvert the substrate and produce a selected product.

IC ICM B09B003-00

ICS C12N001-00; C12N001-14; C12N001-16; C12N001-18; C12N001-20;  
 C12P001-00; C12P001-02; C12P001-06; C12P007-00; C12P007-02;  
 C12P007-06; C12P007-08; C12P007-14

CC 60-4 (Waste Treatment and Disposal)

Section cross-reference(s): 10, 52

ST org waste wastewater ozonization fermn  
 ethanol methanation methane; ozonization org waste  
 wastewater bioconversion bioproduct

## IT Wastes

(organic; process for ozonating and biol. converting organic materials into useful products)

## IT Methanogenic bacteria

Municipal refuse

Photosynthesis, biological

Pigments, nonbiological

Respiration, microbial

Saccharomyces cerevisiae

Scrap tires

Zymomonas mobilis

(process for ozonating and biol. converting organic materials into useful products)

REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L60 ANSWER 24 OF 35 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2003:160534 HCAPLUS Full-text

DOCUMENT NUMBER: 138:186468

TITLE: Manufacture of useful substances from sugar- and protein-containing garbage by microbial reaction

INVENTOR(S): Shimota, Toshimatsu; Shimota, Hiromitsu

PATENT ASSIGNEE(S): Kuraudo K. K., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO.             | KIND | DATE     | APPLICATION NO. | DATE     |
|------------------------|------|----------|-----------------|----------|
| -----                  | ---  | -----    | -----           | -----    |
| JP 2003061695          | A    | 20030304 | JP 2001-254495  | 20010824 |
| PRIORITY APPLN. INFO.: |      |          | JP 2001-254495  | 20010824 |

ED Entered STN: 04 Mar 2003

AB Useful substances, e.g. lactic acid and EtOH, are manufactured by crushing organic matter such as garbage containing sugars and proteins, separating the crushed product into solid and liquid to remove fibers and other solid matter, recovering aqueous suspension containing the sugars, and culturing useful substance-producing bacteria in the suspension as a culture media. For example, lactic acid (I) and EtOH were manufactured by neutralizing reaction solution obtained by culturing heterofermentative lactic acid bacteria, removing the bacterial cells upon flocculation, distilling the remaining liquid to recover EtOH, treating the residue with strong anion exchange resin to adsorb HCl and with weak anion exchange resin to adsorb I, regenerating the strong anion exchange resin with NaOH for converting I to Na lactate, passing the concentrated Na lactate through cation exchange resin, and heating the eluate containing I to evaporate H<sub>2</sub>O to recover I. The fibers and other solid matter may be hydrolyzed or biodegraded into monosaccharides and oligosaccharides for use in culture media.

IC ICM C12P007-06

ICS B01D015-04; B09B003-00; C12P007-56; C12P007-06;

C12R001-01

CC 16-5 (Fermentation and Bioindustrial Chemistry)

Section cross-reference(s): 60

ST garbage carbohydrate protein contg solid liq sepn culture media; ethanol lactate manuf garbage derived culture media lactic

- bacteria; heterolactic fermn carbohydrate protein contg  
garbage derived culture media
- IT Monosaccharides  
Oligosaccharides, preparation  
(fibers and other solid matter degradation into; manufacture of useful substances such as lactic acid and EtOH by culturing bacteria in culture media prepared by crushing carbohydrate- and protein-containing garbage and removing solid matter).
- IT Wastes  
(food-processing; manufacture of useful substances such as lactic acid and EtOH by culturing bacteria in culture media prepared by crushing carbohydrate- and protein-containing garbage and removing solid matter)
- IT Lactic acid bacteria  
(heterofermentative; manufacture of useful substances such as lactic acid and EtOH by culturing bacteria in culture media prepared by crushing carbohydrate- and protein-containing garbage and removing solid matter)
- IT Ion exchangers  
(ionic useful substance concentration by; manufacture of useful substances such as lactic acid and EtOH by culturing bacteria in culture media prepared by crushing carbohydrate- and protein-containing garbage and removing solid matter)
- IT Fermentation  
(lactic acid; manufacture of useful substances such as lactic acid and EtOH by culturing bacteria in culture media prepared by crushing carbohydrate- and protein-containing garbage and removing solid matter)
- IT Fermentation  
Municipal refuse  
(manufacture of useful substances such as lactic acid and EtOH by culturing bacteria in culture media prepared by crushing carbohydrate- and protein-containing garbage and removing solid matter)
- IT Carbohydrates, processes  
Proteins  
(manufacture of useful substances such as lactic acid and EtOH by culturing bacteria in culture media prepared by crushing carbohydrate- and protein-containing garbage and removing solid matter)
- IT Flocculants  
(removal of bacterial cells using; manufacture of useful substances such as lactic acid and EtOH by culturing bacteria in culture media prepared by crushing carbohydrate- and protein-containing garbage and removing solid matter)
- IT Anion exchangers  
(strongly basic, heterolactic acid recovery using; manufacture of useful substances such as lactic acid and EtOH by culturing bacteria in culture media prepared by crushing carbohydrate- and protein-containing garbage and removing solid matter)
- IT Anion exchangers  
(weakly basic, heterolactic acid recovery using; manufacture of useful substances such as lactic acid and EtOH by culturing bacteria in culture media prepared by crushing carbohydrate- and protein-containing garbage and removing solid matter)
- IT 50-21-5P, Lactic acid, preparation 64-17-5P, Ethanol, preparation  
(manufacture of useful substances such as lactic acid and EtOH by culturing bacteria in culture media prepared by crushing carbohydrate- and protein-containing garbage and removing solid matter)

matter)

IT 72-17-3P, Sodium lactate  
 (manufacture of useful substances such as lactic acid and EtOH by  
 culturing bacteria in culture media prepared by crushing  
**carbohydrate-** and protein-containing garbage and removing solid  
 matter)

L60 ANSWER 25 OF 35 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2002:220702 HCAPLUS Full-text

DOCUMENT NUMBER: 136:248788

TITLE: Molding of biodegradable products such as  
 flowerpots using starch, pulverized plant fibers,  
 or raw **garbage-based organic**  
 fertilizers

INVENTOR(S): Sato, Seiko; Su, Jianxin; Hou, Jinan

PATENT ASSIGNEE(S): Japan

SOURCE: PCT Int. Appl., 32 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO.   | KIND | DATE     | APPLICATION NO. | DATE       |
|--|------|----------|-----------------|------------|
| WO 2002022730  | A1   | 20020321 | WO 2000-JP6279  | 20000913   |
| W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU,<br>CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL,<br>IN, IS, JP, KE, KG, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD,<br>MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI,<br>SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, AM,<br>AZ, BY, KG, KZ, MD, RU, TJ, TM<br>RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH,<br>CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE,<br>BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG |      |          |                 |            |
| AU 2000073123  | A5   | 20020326 | AU 2000-73123   | 20000913   |
| PRIORITY APPLN. INFO.:   |      |          | WO 2000-JP6279  | A 20000913 |

ED Entered STN: 22 Mar 2002

AB ≥1 Selected from starch, pulverized plant fibers, and organic fertilizers made  
 from raw garbage is mixed with wheat flour and binders, added with water, and  
 kneaded to give a composition for molding of biodegradable products such as  
 flowerpots.

IC ICM C08L003-00

ICS C08L097-02; B09B003-00; A01G009-02

CC 38-3 (Plastics Fabrication and Uses)

Section cross-reference(s): 19, 43, 60

IT Alcohols, uses

Corn oil

(as binder for molding biodegradable product)

IT Tea products

(leaves, oolong, residues; mixed with binder for molding  
 biodegradable product)

IT Bran

(mixed with binder for molding biodegradable  
 product)

IT Plant fibers

(mixed with binder for molding biodegradable  
 product)

IT Fertilizers

(organic, from raw garbage; mixed with  
binder for molding of biodegradable product)

IT Food processing  
(solid wastes; for manufacturing organic fertilizer for  
molding biodegradable product)

IT Glycine max  
(soybean products, residues; mixed with binder for  
molding biodegradable product)

IT 9005-25-8, Starch, uses  
(mixed with binder for molding biodegradable  
product)

REFERENCE COUNT: 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR  
THIS RECORD. ALL CITATIONS AVAILABLE IN THE  
RE FORMAT

L60 ANSWER 26 OF 35 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2001:552639 HCAPLUS Full-text

DOCUMENT NUMBER: 135:126642

TITLE: Porous agglomerates for planting, water  
purification, etc., and their manufacture

INVENTOR(S): Tokashiki, Yoshihiro

PATENT ASSIGNEE(S): Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO.             | KIND | DATE     | APPLICATION NO. | DATE     |
|------------------------|------|----------|-----------------|----------|
| -----                  | ---- | -----    | -----           | -----    |
| JP 2001204245          | A    | 20010731 | JP 2000-20084   | 20000128 |
| PRIORITY APPLN. INFO.: |      |          | JP 2000-20084   | 20000128 |

ED Entered STN: 31 Jul 2001

AB Inorg. grains having different particle sizes, e.g. gravels, clays, are  
tangled with organic substances, e.g. plant fibers, and bonded with a binder  
to give the title porous agglomerates. Wastes such as coal ash, excavated  
soil, wastepaper, mown grass, etc. may be used in preparation of the  
materials. The agglomerates are prepared by mixing of the inorg. and organic  
components in a granulation apparatus, addition of biodegradable binders to  
the mixture, addition of (warm) water, and drying of the obtained granules  
having certain sizes.

IC ICM A01G001-00

ICS B01D039-02; B09B003-00; C02F001-28; C09K017-40; C09K101-00

CC 60-3 (Waste Treatment and Disposal)

Section cross-reference(s): 19, 61

IT Porous materials

(agglomerates; manufacture of porous materials suitable for planting and  
water treatment from organic and inorg. wastes)

IT Wastewater treatment sludge

(cakes; manufacture of porous materials suitable for planting and water  
treatment from organic and inorg. wastes)

IT Wood

(chips; manufacture of porous materials suitable for planting and water  
treatment from organic and inorg. wastes)

IT Ashes (residues)

(coal; manufacture of porous materials suitable for planting and water  
treatment from organic and inorg. wastes)

IT Solid wastes

(construction; manufacture of porous materials suitable for planting and water treatment from **organic** and inorg. wastes)

- IT Straw  
(cut; manufacture of porous materials suitable for planting and water treatment from **organic** and inorg. wastes)
- IT Soils  
(excavation; manufacture of porous materials suitable for planting and water treatment from **organic** and inorg. wastes)
- IT Bagasse  
Gravel  
Soil substitutes  
Solid wastes  
Wastewater treatment  
Water purification  
(manufacture of porous materials suitable for planting and water treatment from **organic** and inorg. wastes)
- IT Clays, uses  
Plant fibers  
(manufacture of porous materials suitable for planting and water treatment from **organic** and inorg. wastes)
- IT Grass (Poaceae)  
(mown; manufacture of porous materials suitable for planting and water treatment from **organic** and inorg. wastes)
- IT Agglomerates (clustered mass)  
(porous; manufacture of porous materials suitable for planting and water treatment from **organic** and inorg. wastes)
- IT Construction materials  
(solid waste; manufacture of porous materials suitable for planting and water treatment from **organic** and inorg. wastes)
- IT Paper  
(wastepaper; manufacture of porous materials suitable for planting and water treatment from **organic** and inorg. wastes)

L60 ANSWER 27 OF 35 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1997:361249 HCAPLUS Full-text

DOCUMENT NUMBER: 127:23172

TITLE: Materials containing coal ash for treatment of **organic wastes** and the treatment process

INVENTOR(S): Fujii, Satoru; Tanosaki, Takao; Nozaki, Kenji; Murakami, Yutaka; Niino, Kiyonori

PATENT ASSIGNEE(S): Onoda Cement Co., Ltd., Japan; Nippon Gijutsu Kaihatsu Kenkyusho Y. K.

SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO.             | KIND | DATE     | APPLICATION NO. | DATE     |
|------------------------|------|----------|-----------------|----------|
| -----                  | ---- | -----    | -----           | -----    |
| JP 09099279            | A    | 19970415 | JP 1995-282622  | 19951004 |
| PRIORITY APPLN. INFO.: |      |          | JP 1995-282622  | 19951004 |

ED Entered STN: 09 Jun 1997

AB The materials mainly comprising coal ash with hydraulic modulus 0.02-0.20 and Blaine sp. surface area  $\geq 2400$  cm<sup>2</sup>/g are used for fermentation treatment of **organic wastes** with microorganisms. The process comprises fermentation of **organic wastes** by keeping them under weakly alkaline conditions by adding the

coal ash at 3 weight parts to 100 weight parts of the organic wastewater. The process prevents rotting and bad smell of garbages or organic sludges during their microbial treatment and provides reuse of the wastes as fertilizers.

- IC ICM B09B003-00  
ICS C02F011-02; C05F007-00; C05F009-00; C05F017-00
- CC 60-4 (Waste Treatment and Disposal)  
Section cross-reference(s): 19
- ST org waste fermn microorganism coal ash; sludge  
fermn microorganism coal ash
- IT Nut (seed)  
(carbon source; coal ash for prevention of rotting and bad smell during fermentation treatment of organic wastes)
- IT Carbon sources, microbial  
Compost  
Deodorization  
Lactic acid bacteria  
Manure  
Municipal refuse  
Photosynthetic bacteria  
Sawdust  
Sludges  
Solid wastes  
Wastewater treatment sludge  
Yeast  
(coal ash for prevention of rotting and bad smell during fermentation treatment of organic wastes)
- IT Ashes (residues)  
(coal; coal ash for prevention of rotting and bad smell during fermentation treatment of organic wastes)
- IT Wood  
Wood  
(flour, carbon source; coal ash for prevention of rotting and bad smell during fermentation treatment of organic wastes)
- IT Seed  
(hull, carbon source; coal ash for prevention of rotting and bad smell during fermentation treatment of organic wastes)
- IT Rice (Oryza sativa)  
(husk; coal ash for prevention of rotting and bad smell during fermentation treatment of organic wastes)
- IT Chaff  
(rice husk; coal ash for prevention of rotting and bad smell during fermentation treatment of organic wastes)
- IT 74-93-1, Methyl mercaptan, processes 75-50-3, Trimethylamine, processes 7664-41-7, Ammonia, processes 7783-06-4, Hydrogen sulfide, processes  
(coal ash for prevention of rotting and bad smell during fermentation treatment of organic wastes)

L60 ANSWER 28 OF 35 HCAPLUS COPYRIGHT 2007 ACS on STN  
ACCESSION NUMBER: 1993:561950 HCAPLUS Full-text  
DOCUMENT NUMBER: 119:161950  
TITLE: Preparation of starch- and/or protein-containing packaging or insulating materials as substitutes for cellular polystyrene or polyurethane materials  
INVENTOR(S): Schaaf, Heinz Josef  
PATENT ASSIGNEE(S): Schaaf Technologie GmbH, Germany

SOURCE: Ger. Offen., 4 pp.  
 CODEN: GWXXBX  
 DOCUMENT TYPE: Patent  
 LANGUAGE: German  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

| PATENT NO.             | KIND | DATE     | APPLICATION NO. | DATE     |
|------------------------|------|----------|-----------------|----------|
| DE 4126756             | A1   | 19930218 | DE 1991-4126756 | 19910813 |
| PRIORITY APPLN. INFO.: |      |          | DE 1991-4126756 | 19910813 |

ED Entered STN: 16 Oct 1993

AB In the preparation of the title materials, a composition containing starch and/or proteins as well as **organic wastes** and additives for improving the elasticity and/or sorption properties is extruded and expanded, and the extruded articles are coated with fibrous **organic wastes** and **biodegradable binders**.

IC ICM B29B011-10

ICS B29C067-20; B29C069-00; B29C041-08; B65D065-42; B65D081-12

ICI B29K025-00

CC 38-3 (Plastics Fabrication and Uses)

L60 ANSWER 29 OF 35 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1988:97071 HCAPLUS Full-text

DOCUMENT NUMBER: 108:97071

TITLE: Solid-liquid separation by membrane with biodegradable porous layer

INVENTOR(S): Nakamura, Kanji; Taniguchi, Yoshio; Miyaji, Arimasa; Kitagawa, Mikio; Furuichi, Mitsuharu; Ichanagi, Naoto

PATENT ASSIGNEE(S): Kurita Water Industries, Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 4 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

| PATENT NO.             | KIND | DATE     | APPLICATION NO. | DATE     |
|------------------------|------|----------|-----------------|----------|
| JP 62279804            | A    | 19871204 | JP 1986-123091  | 19860528 |
| PRIORITY APPLN. INFO.: |      |          | JP 1986-123091  | 19860528 |

ED Entered STN: 19 Mar 1988

AB A membrane structure useful for filtering solids from liqs. has a porous layer of granules, e.g., metal oxides, clay, and activated C, containing a **biodegradable binder**, e.g. chitosan, polysaccharides, and biopolymer on one side of a permeable membrane. The solid deposit on the porous layer is easily peeled off during filtration and the membrane filterability is improved due to the utilization of the **biodegradable binder**. Stable filtration is maintained without washing the membrane. Thus, chitosan 1000 and  $\alpha$ -Fe<sub>2</sub>O<sub>3</sub> 100 mg/L granules (average diameter: 3  $\mu$ ) were mixed with an untreated **organic wastewater** and the mixture was filtered at 2 kg/cm<sup>2</sup> and 2 m/s through a tubular ultrafiltration membrane of polysulfone to form a porous layer on the membrane, and then anaerobically treated effluent was filtered under the same condition through the prepared porous layer and the membrane. The filterability was improved in comparison with that without the porous layer.

IC ICM B01D013-00

ICS B01D013-04



CC 48-1 (Unit Operations and Processes)  
 Section cross-reference(s): 60

ST membrane sepn biodegradable porous layer; filterability improvement  
 membrane porous layer; chitosan biodegradable binder  
 porous layer; polysaccharide biodegradable binder  
 porous layer; biopolymer biodegradable binder  
 porous layer; metal oxide granule porous layer; activated carbon  
 granule porous layer; clay granule porous layer; polysulfone tubular  
 ultrafiltration membrane wastewater

IT Biopolymers  
 Polysaccharides, uses and miscellaneous  
 (binder, biodegradable, in porous layer on  
 permeable membranes for liquid filterability improvement)

IT Wastewater treatment  
 (membrane separation, of anaerobically treated effluent, porous layer  
 for, granules and biodegradable binder in)

IT Filtering materials  
 (membranes, for liquid filterability improvement, porous layer on,  
 granules and biodegradable binder in)

=> d 30-35 ibib abs ind

L60 ANSWER 30 OF 35 JAPIO (C) 2007 JPO on STN  
 ACCESSION NUMBER: 1998-296214 JAPIO Full-text  
 TITLE: GARBAGE TREATING DEVICE  
 INVENTOR: UMEDA AKIHIRO; HIROTA HIROMI; NUKINA YASUYUKI;  
 NISHIDA HIROSHI  
 PATENT ASSIGNEE(S): MATSUSHITA ELECTRIC IND CO LTD  
 PATENT INFORMATION:

| PATENT NO   | KIND | DATE     | ERA    | MAIN IPC   |
|-------------|------|----------|--------|------------|
| JP 10296214 | A    | 19981110 | Heisei | B09B003-00 |

#### APPLICATION INFORMATION

STN FORMAT: JP 1997-110732 19970428  
 ORIGINAL: JP09110732 Heisei  
 PRIORITY APPLN. INFO.: JP 1997-110732 19970428  
 SOURCE: PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined  
 Applications, Vol. 1998

AN 1998-296214 JAPIO Full-text

AB PROBLEM TO BE SOLVED: To enable garbage to be disposed of on the spot without conveying the garbage by providing a means to remove surplus microbes sticking to a filtration bed in a biodegradation tank for biodegrading the garbage produced by crushing through a crushing device with the help of microbes.  
 SOLUTION: Garbage loaded from the drainage port of a sink table is crushed into fine pieces by a crushing device 1 and the fine pieces are transferred to an adjustment tank 2 together with water flowing in from the drainage port of the sink table. Further, the fine pieces are hydrolyzed in the adjustment tank 2 into a water soluble organic matter which is, in turn, caused to flow down to a biodegradation tank 4. In the biodegradation tank 4, a filtration bed 8 and a scraping bar 9 which is fixed to a shaft 10 rotated by a drive motor 11 are arranged. Surplus microbes which proliferate on the surface of the filtration bed 8 are removed by a scraping action by rotating the scraping bar 9. Thus it is possible to load the garbage into the crushing device 1 on the spot and dispense with a garbage conveying operation.  
 COPYRIGHT: (C) 1998, JPO

IC ICM B09B003-00

L60 ANSWER 31 OF 35 JAPIO (C) 2007 JPO on STN  
 ACCESSION NUMBER: 2005-102669 JAPIO Full-text  
 TITLE: MATERIAL FOR TREATING **ORGANIC**  
**WASTE** AND METHOD FOR MANUFACTURING THE  
 SAME  
 INVENTOR: HARA YUTAKA  
 PATENT ASSIGNEE(S): HARA YUTAKA  
 PATENT INFORMATION:

| PATENT NO     | KIND | DATE     | ERA    | MAIN IPC    |
|---------------|------|----------|--------|-------------|
| JP 2005102669 | A    | 20050421 | Heisei | A01K001-015 |

## APPLICATION INFORMATION

STN FORMAT: JP 2003-376274 20031001  
 ORIGINAL: JP2003376274 Heisei  
 PRIORITY APPLN. INFO.: JP 2003-376274 20031001  
 SOURCE: PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined  
 Applications, Vol. 2005

AN 2005-102669 JAPIO Full-text

AB PROBLEM TO BE SOLVED: To obtain material for treating **organic wastes** suitable to the environment which can treat excretion and the like of pets through decomposition or extermination treatment such as bringing organic materials to have lower molecular weight, decomposition and adsorption, **biodegradation** treatment by microorganism activity and the like, and excellent in the aspect of disposal after use.

SOLUTION: The material for treating **organic wastes** is provided by mixing and kneading a main catalyst material 1 composed of a porous organic material such as porous powdery wood material or the like having high water retainability and air permeability, a porous auxiliary catalyst material 2 having adsorbing power for odors and improved in granulation hardness with a binder 3 composed of organic material having catalytic function for easily culturing and immobilizing enzymes to obtain a mixture having suitable hardness for setting enzyme material 4, adding the enzyme material to the mixture and culturing the mixture to set the enzyme, subsequently mixing, kneading and molding the mixture to obtain the spherical, granular or flaky material for treating **organic wastes**.

COPYRIGHT: (C)2005, JPO&NCIPI

IC ICM A01K001-015

ICS B09B003-00; C02F011-02

L60 ANSWER 32 OF 35 JAPIO (C) 2007 JPO on STN  
 ACCESSION NUMBER: 2003-010820 JAPIO Full-text  
 TITLE: CONTAINER FOR DISPOSING **ORGANIC**  
**WASTE**  
 INVENTOR: NAKAJI KOJIRO  
 PATENT ASSIGNEE(S): SANKO:KK  
 PATENT INFORMATION:

| PATENT NO     | KIND | DATE     | ERA    | MAIN IPC   |
|---------------|------|----------|--------|------------|
| JP 2003010820 | A    | 20030114 | Heisei | B09B003-00 |

## APPLICATION INFORMATION

STN FORMAT: JP 2001-204779 20010705  
 ORIGINAL: JP2001204779 Heisei  
 PRIORITY APPLN. INFO.: JP 2001-204779 20010705  
 SOURCE: PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined  
 Applications, Vol. 2003

AN 2003-010820 JAPIO Full-text

AB PROBLEM TO BE SOLVED: To provide a container which can be eco-friendly disposed of together with **organic waste** such as garbage and, and is easy to handle for any user. SOLUTION: This container for disposing of the **organic waste** has a **water-** resistant and **biodegradable** Thomson paper box 2 installed inside of a paper bag 1. The Thomson paper box 2 has a fermentation promoter 5 which can be activated through contacting with **water**. The paper box 2 is preferably used by folding and combining at least two **pieces** of sheets. The fermentation promoter 5 is preferably used by putting it in a **water**-absorbing paper envelope. COPYRIGHT: (C)2003,JPO

IC ICM B09B003-00

L60 ANSWER 33 OF 35 JAPIO (C) 2007 JPO on STN  
 ACCESSION NUMBER: 2000-038604 JAPIO Full-text  
 TITLE: MOLDABLE PRODUCTION OF SINTERED BODY  
 INVENTOR: ITO SHIZUE; HIRAISHI HISATO  
 PATENT ASSIGNEE(S): CITIZEN WATCH CO LTD  
 PATENT INFORMATION:

| PATENT NO     | KIND | DATE     | ERA    | MAIN IPC   |
|---------------|------|----------|--------|------------|
| JP 2000038604 | A    | 20000208 | Heisei | B22F003-10 |

#### APPLICATION INFORMATION

STN FORMAT: JP 1999-122662 19990428  
 ORIGINAL: JP11122662 Heisei  
 PRIORITY APPLN. INFO.: JP 1998-139342 19980521  
 SOURCE: PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 2000

AN 2000-038604 JAPIO Full-text

AB PROBLEM TO BE SOLVED: To reduce environmental loads, to improve the safety and to increase the precision of the product by holding a molded body obtd. by mixing inorganic fine powder and the organic **binder** components of a **biodegradable** resin in water containing a decomposing enzyme to decompose the **biodegradable** resin and sintering the obtd. degreased body. SOLUTION: Fine powder of an oxide or the like of aluminum, stainless steel or the like is mixed with at least one kind of **biodegradable** resin such as a polyester resin to produce a compound, which is subjected to extrusion molding. An obtd. molded body is held in water containing a decomposing enzyme having the action of decomposing the **biodegradable** resin, the resin is degraded into dimers, monomers or the like, which are eluted and removed, thereby the degreasing is executed. As this time, at need, plural kinds of **biodegradable** resins and plural kinds of decomposing enzymes are used, or, as the organic **binder** components, a non-**biodegradable** resin or a low molecular **organic matter** is contained, and, moreover, the temperature or the concentration of hydrogen ions in water containing the decomposing enzyme are controlled to maximize the activity of the enzyme. COPYRIGHT: (C)2000,JPO

IC ICM B22F003-10  
 ICS B22F003-02; C04B035-638

L60 ANSWER 34 OF 35 COMPENDEX COPYRIGHT 2007 EEI on STN  
 ACCESSION NUMBER: 2000(33):1639 COMPENDEX Full-text  
 TITLE: Assessing **biodegradable organic matter**.  
 AUTHOR: Volk, Christian J. (American Water Works Service Co, IL, USA); LeChevallier, Mark W.  
 SOURCE: Journal / American Water Works Association v 92 n 5 2000.p 64-76  
 SOURCE: Journal / American Water Works Association v 92 n 5 2000.p 64-76  
 CODEN: JAWWA5 ISSN: 0003-150X

PUBLICATION YEAR: 2000  
 DOCUMENT TYPE: Journal  
 TREATMENT CODE: Bibliography; Experimental  
 LANGUAGE: English

AN 2000(33):1639 COMPENDEX Full-text

AB This article summarizes data collected during various surveys that assessed four aspects of biodegradable organic matter (BOM) in drinking water: (1) BOM concentrations entering distribution systems, (2) the relationship between concentrations of assimilable organic carbon (AOC) and biodegradable dissolved organic carbon (BDOC), (3) field tests of a simple method of measuring BDOC using bioreactors, and (4) the effect of BOM on coliform occurrences in distribution networks. Overall, average concentrations of AOC and BDOC in plant effluent were 100 µg/L and 0.32 mg/L, respectively. A statistically significant but weak relationship between AOC and BDOC concentrations suggests that both parameters need to be monitored during biostability studies because they provide different pieces of information. BDOC bioreactors are useful for measuring BDOC concentrations at water utilities. However, they require a long time to colonize and must adapt to water at the site where they are used. Coliform occurrences were associated with three factors: temperature, disinfectant type and concentration, and AOC concentration. When threshold values for these factors were exceeded (15 degree C, AOC greater than 100 µg/L, and dead-end disinfectant residuals less than 0.5 mg/L for free chlorine or 1.0 mg/L for chloramines), the probability of coliform occurrences greatly increased. (Author abstract) 51 Refs.

AN 2000(33):1639 COMPENDEX Full-text

CC 446.1 Water Supply Systems; 445.2 Water Analysis; 801.2 Biochemistry; 801 Chemistry; 461.9 Biology; 461.8 Biotechnology

CT \*Water distribution systems; Composition effects; Coliform bacteria; Biodegradation; Carbon; Bioreactors; Thermal effects; Disinfectants; Water bacteriology; Water analysis

ST Dissolved organic carbon (DOC); Biostability; Assimilable organic carbon (AOC); Water utilities; Chloroamine

ET C

L60 ANSWER 35 OF 35 COMPENDEX COPYRIGHT 2007 EEI on STN

ACCESSION NUMBER: 1998(52):2717 COMPENDEX Full-text

TITLE: Location of protein and polysaccharide hydrolytic activity in suspended and biofilm wastewater cultures.

AUTHOR: Confer, David R. (Univ of Arizona, Tucson, AZ, USA); Logan, Bruce E.

SOURCE: Water Research v 32 n 1 Jan 1998.p 31-38

SOURCE: Water Research v 32 n 1 Jan 1998.p 31-38

CODEN: WATRAG ISSN: 0043-1354

PUBLICATION YEAR: 1998

DOCUMENT TYPE: Journal

TREATMENT CODE: Experimental

LANGUAGE: English

AN 1998(52):2717 COMPENDEX Full-text

AB Macromolecular compounds such as proteins and polysaccharides can comprise a significant portion of dissolved organic carbon in wastewater, but limited information is available on how these compounds are degraded in biological wastewater treatment systems. Bacteria cannot assimilate intact macromolecules but must first hydrolyze them to monomers or small oligomers. Whether this hydrolysis occurs in contact with cells or by enzymes released into bulk solution is critical to an understanding of macromolecule metabolism. This study used the fluorescent model substrate analogs L-leucine-7-amido-4-methylcoumarin center dot HCl (Leu-MCA) and 4-methylumbelliferyl- alpha -glucoside (MUF- alpha -glc) to determine the location of leucine aminopeptidase and alpha -glucosidase activity in wastewater inoculated

biofilm and suspended cultures and in trickling filter effluent. In biofilm cultures, no more than 3% of total hydrolytic activity was located in the cell-free bulk solution. Similar results were obtained in suspended culture where 97% of leucine aminopeptidase and 93% of alpha -glucosidase activity occurred in contact with cells. In trickling filter effluent, hydrolysis was also predominantly cell-associated. Hydrolysis rates were at least five times higher in contact with cells and sloughed biofilm pieces than in cell-free solution. When considered with the results of other experiments demonstrating that hydrolytic fragments of proteins and polysaccharides accumulate in bulk solution during macromolecule degradation, these experiments support a generalized mechanism for macromolecule degradation that features cell-associated hydrolysis followed by the release of hydrolytic fragments back into bulk solution. This cell-associated hydrolysis and release is repeated until hydrolytic fragments are small enough to be assimilated by cells. Use of this macromolecule degradation mechanism can help refine wastewater treatment models so that they can more accurately predict the performance of bioreactors treating complex wastewaters. (Author abstract) 28 Refs.

AN 1998(52):2717 COMPENDEX Full-text  
 CC 452.4 Industrial Wastes Treatment; 802.3 Chemical Operations; 462.5 Biomaterials; 802.2 Chemical Reactions; 804.1 Organic Components; 815.1.1 Organic Polymers  
 CT \*Wastewater treatment; Bacteria; Hydrolysis; Proteins; Polysaccharides; Macromolecules; Cell culture; Solutions; Biodegradation; Biofilms  
 ST Biofilm wastewater culture; Macromolecule degradation  
 ET Cl\*H; HCl; H cp; cp; Cl cp

=> d his nofile

(FILE 'HOME' ENTERED AT 11:39:19 ON 05 OCT 2007)

FILE 'HCAPLUS' ENTERED AT 11:39:31 ON 05 OCT 2007

L1 1 SEA ABB=ON PLU=ON US20040127355/PN

FILE 'WPIX' ENTERED AT 11:39:50 ON 05 OCT 2007

L2 1 SEA ABB=ON PLU=ON US20040127355/PN

L3 QUE ABB=ON PLU=ON ORGANIC(2A) (WASTE? OR MATTER? OR SOLID? OR TRASH? OR GARBAGE?)

L4 544 SEA ABB=ON PLU=ON L3 AND BIODEGRAD?

L5 568 SEA ABB=ON PLU=ON L3 AND (BIODEGRAD? OR BIO(A)DEGRAD?)

L6 201 SEA ABB=ON PLU=ON L5 AND SOLID?

L7 24 SEA ABB=ON PLU=ON L6 AND (ODOR? OR ODOUR? OR SMELL?)

L8 1 SEA ABB=ON PLU=ON L7 AND L2

L9 1 SEA ABB=ON PLU=ON L7 AND (DRY OR DRIED) (2A) PIECE?

L10 13 SEA ABB=ON PLU=ON L7 AND (HEAT? OR TEMP?)

L11 1 SEA ABB=ON PLU=ON L7 AND (BIODEGRAD? OR BIO(A)DEGRAD?) (3A) BINDER

L12 24 SEA ABB=ON PLU=ON (L7 OR L8 OR L9 OR L10 OR L11)

L13 2 SEA ABB=ON PLU=ON L12 AND B09B0001?/IPC

L14 QUE ABB=ON PLU=ON ORGANIC(2A) (WASTE? OR MATTER? OR TRASH? OR GARBAGE?)

L15 21 SEA ABB=ON PLU=ON L14 AND L12

L16 2 SEA ABB=ON PLU=ON L15 AND CARBOHYDRAT?

L17 14 SEA ABB=ON PLU=ON L15 AND (WATER OR LIQUID WATER)

L18 21 SEA ABB=ON PLU=ON (L15 OR L16 OR L17)

L19 18 SEA ABB=ON PLU=ON L18 AND (PY<2003 OR PRY<2003 OR AY<2003)

FILE 'HCAPLUS' ENTERED AT 11:53:43 ON 05 OCT 2007

L20 125121 SEA ABB=ON PLU=ON ORGANIC(2A) (WASTE? OR MATTER? OR TRASH? OR GARBAGE?)

L21 5 SEA ABB=ON PLU=ON L20 AND (BIODEGRAD? OR BIO(A)DEGRAD?) (3A) BINDER

L22 5250 SEA ABB=ON PLU=ON L20 AND (BIODEGRAD? OR BIO(A)DEGRAD?)

L23 0 SEA ABB=ON PLU=ON L22 AND (DRY OR DRIED) (2A) PIECE?

L24 108 SEA ABB=ON PLU=ON L22 AND (ODOR? OR ODOUR? OR SMELL?)

L25 1 SEA ABB=ON PLU=ON L20 AND L1

L26 0 SEA ABB=ON PLU=ON L20 AND B09B0003?/IPC

L27 2620 SEA ABB=ON PLU=ON L20 AND B09B0003?/IC

L28 41 SEA ABB=ON PLU=ON L27 AND MICROBIAL?

L29 0 SEA ABB=ON PLU=ON L28 AND PICES?

L30 1 SEA ABB=ON PLU=ON L28 AND PIECE?

L31 3 SEA ABB=ON PLU=ON L28 AND (ODOR? OR ODOUR? OR SMELL?)

L32 8 SEA ABB=ON PLU=ON L21 OR L23 OR (L25 OR L26) OR (L29 OR L30 OR L31)

L33 4 SEA ABB=ON PLU=ON L28 AND CARBOHYDRAT?

L34 12 SEA ABB=ON PLU=ON L32 OR L33

FILE 'PASCAL' ENTERED AT 12:01:19 ON 05 OCT 2007

L35 39425 SEA ABB=ON PLU=ON ORGANIC(2A) (WASTE? OR MATTER? OR TRASH? OR GARBAGE?)

L36 0 SEA ABB=ON PLU=ON L35 AND (BIODEGRAD? OR BIO(A)DEGRAD?) (3A) BINDER

L37 4681 SEA ABB=ON PLU=ON L35 AND MICROBIAL?

L38 0 SEA ABB=ON PLU=ON L37 AND (CARBOHYDRAT? (3A) BINDER? OR

BINDER?)

L39 18 SEA ABB=ON PLU=ON L37 AND (ODOR? OR ODOUR? OR SMELL?)  
 L40 0 SEA ABB=ON PLU=ON L38 AND (DEVICE? OR APPARATUS?)  
 L41 0 SEA ABB=ON PLU=ON L36 OR L38 OR L40  
 L42 7 SEA ABB=ON PLU=ON L39 AND (WATER OR LIQUID WATER)  
 L43 3 SEA ABB=ON PLU=ON L42 AND (BIODEGRAD? OR BIO(A)DEGRAD?)  
 L44 1028 SEA ABB=ON PLU=ON L37 AND TREAT?  
 L45 1 SEA ABB=ON PLU=ON L44 AND PIECE?

FILE 'JAPIO' ENTERED AT 12:06:18 ON 05 OCT 2007

L46 1 SEA ABB=ON PLU=ON L35 AND (BIODEGRAD? OR BIO(A)DEGRAD?) (3  
 A) BINDER

FILE 'JAPIO' ENTERED AT 12:14:44 ON 05 OCT 2007

L47 9307 SEA ABB=ON PLU=ON ORGANIC(2A) (WASTE? OR MATTER? OR  
 TRASH? OR GARBAGE?)  
 L48 128 SEA ABB=ON PLU=ON L47 AND (BIODEGRAD? OR BIO(A)DEGRAD?)  
 L49 0 SEA ABB=ON PLU=ON L48 AND CARBOHYDRAT? (3A) BINDER?  
 L50 2 SEA ABB=ON PLU=ON L48 AND BINDER  
 L51 70 SEA ABB=ON PLU=ON L48 AND (WATER OR LIQUID WATER)  
 L52 2 SEA ABB=ON PLU=ON L51 AND PIECE?  
 L53 4 SEA ABB=ON PLU=ON L46 OR L49 OR L50 OR L52

FILE 'COMPENDEX' ENTERED AT 12:16:55 ON 05 OCT 2007

L54 0 SEA ABB=ON PLU=ON L35 AND (BIODEGRAD? OR BIO(A)DEGRAD?) (3  
 A) BINDER  
 L55 1165 SEA ABB=ON PLU=ON L47 AND (BIODEGRAD? OR BIO(A)DEGRAD?)  
 L56 0 SEA ABB=ON PLU=ON L55 AND (CARBOHYDRAT? (3A) BINDER? OR  
 BINDER)  
 L57 0 SEA ABB=ON PLU=ON L55 AND SOLID? (3A) PIECE?  
 L58 2 SEA ABB=ON PLU=ON L55 AND PIECE?  
 L59 2 SEA ABB=ON PLU=ON L54 OR (L56 OR L57 OR L58)

FILE 'WPIX, HCAPLUS, JAPIO, COMPENDEX' ENTERED AT 12:20:17 ON 05 OCT 2007

L60 35 DUP REM L19 L34 L41 L53 L59 (1 DUPLICATE REMOVED)  
 ANSWERS '1-18' FROM FILE WPIX  
 ANSWERS '19-29' FROM FILE HCAPLUS  
 ANSWERS '30-33' FROM FILE JAPIO  
 ANSWERS '34-35' FROM FILE COMPENDEX